Public Health Assessment for

PETITIONED PUBLIC HEALTH ASSESSMENT

ALLEN PARK CLAY MINE

ALLEN PARK, WAYNE COUNTY, MICHIGAN

CERCLIS NO. MID980568711

NOVEMBER 20, 1992

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Agency for Toxic Substances and Disease Registry

Comments Period Ends.

DECEMBER 24, 1992

THE ATSDR HEALTH ASSESSMENT : A NOTE OF EXPLAINATION

Section 104 (i) (6) (F) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states"...the term 'health assessment' shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risks assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, this Health Assessment has been conducted using available data. Additional Health Assessments may be conducted for this site as more information becomes available.

The conclusions and recommendations presented in this Health Assessment are the result of site specific analyses and are not to be cited or quoted for other evaluations or Health Assessments.

INITIAL RELEASE

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY
DIVISION OF HEALTH ASSESSMENT AND CONSULTATION
ATLANTA, GEORGIA

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY

The Allen Park Clay Mine (APCM) landfill is in Wayne County, Michigan, within the city limits of Allen Park. The APCM site is owned and operated by the Ford Motor Company. The site is bordered on the south by Allen Park, on the east by Melvindale, and on the west by the Snow Woods area of the City of Dearborn. Those residential areas are separated from the APCM site by 6- to 8-lane highways. The Ford Motor Company Rouge River Plant lies a quarter mile to the north of the site.

The Ford Motor Company developed a clay mine on the site before 1956. Since 1956, the clay excavations have been backfilled with wastes from the Ford Motor Company Rouge River Plant. Some of the wastes (i.e., electric arc furnace dust and decanter tank tar sludge) are classified by the U.S. Environmental Protection Agency as hazardous. Beginning in November 1980, those hazardous wastes were separately deposited at the site in a designated hazardous waste management area called Cell I. In 1986, Cell I was closed, and a leachate collection system and clay cap were installed. A Resource Conservation and Recovery Act (RCRA) Part B permit application for operation of a hazardous waste disposal cell (Cell II) was approved in June 1989. Currently, the cell does not receive wastes; it will probably begin operating in the summer of 1993.

Area residents have expressed a variety of concerns about the APCM facility. They worry that wastes disposed of at the site might cause illness, particularly cancer, in their community. Concerns have also been raised that dusts generated by site activities might cause illness, and that existing illnesses might become worse as a result of the site. Because of those concerns, two petitions to conduct a public health assessment of the Allen Park Clay Mine site were submitted to the Agency for Toxic Substances and Disease Registry (ATSDR).

Contaminants, including metals and polycyclic aromatic hydrocarbons (PAHs), have been identified in on-site groundwater, storm water runoff, and sediments. ATSDR could not determine if these contaminants were released from the APCM site. Metals have also been found in on-site air. No completed exposure pathways (ways for contaminants to reach the public) have been identified; however, potential exposure pathways do exist. Residents living near the site could be exposed to contaminants in the air. Children playing in the Allen and Tyre storm water drains which run through the community of Melvindale also could be exposed to contaminants in storm water runoff and sediments. Contaminants found in on-site storm water runoff and sediments, however, have not been at levels likely to cause illness and disease through intermittent exposure. In the past, contact with contaminants in the leachate was possible through the Allen and Tyre drains. Installation of leachate collection systems has eliminated that

exposure pathway. Finally, although there are contaminants at levels of health concern in groundwater, no uses of that groundwater have been identified.

Residents expressed concerns that the communities surrounding the site may have a high rate of cancer. Health outcome data for the nearby areas indicate that, from 1973 to 1989, there has been an excess occurrence of brain cancer in the Snow Woods community of Dearborn. However, that increase in cancer occurrence could not be attributed to human exposures to contaminants from the site.

From available information, ATSDR has concluded that the APCM site is an indeterminate public health hazard. There is no evidence that people have been exposed to hazardous substances at concentrations likely to cause adverse health effects. However, ATSDR has identified data gaps that limit ATSDR's ability to fully evaluate the site. According to the facility's operating license, air monitoring will be conducted when the new hazardous waste disposal cell begins receiving waste. ATSDR recommends review of this air data to ensure that particulate and contaminant concentrations are at levels that will not endanger public health. ATSDR also recommends that off-site groundwater be monitored, or steps be taken to ensure that the groundwater is not used in the future unless treated.

ATSDR's Health Activities Recommendation Panel (HARP) has reviewed the APCM site to determine if any follow-up health activities are indicated. Because of the elevation of brain cancer incidence rates, the panel determined that a community health investigation and health statistics review is indicated. ATSDR will also evaluate any new data or information it receives about this site to determine if additional public health actions are appropriate.

BACKGROUND

A. Site Description and History

The Allen Park Clay Mine (APCM) site covers 260 acres, approximately 8 miles southwest of downtown Detroit, at 17250 Lakewood Boulevard, Allen Park, Wayne County, Michigan. The location of the site is shown in Figure 1 (all figures are in Appendix A). The landfill is bordered on the south by Allen Park, on the east by Melvindale, and on the west by the Snow Woods area of the City of Dearborn. Although the site is bordered by residential areas on all but the northern side, it is separated from the residential areas by 6- to 8-lane highways. The Ford Motor Company Rouge River Plant is in the industrial area bordering the northern part of the site. The Rouge River lies about 1 mile north of the APCM site.

The 260-acre APCM site consists of 17 acres of hazardous waste landfill (Cell I and Cell II) and 149 acres of a solid waste landfill (called the old landfill unit) that received wastes before the Resource Conservation and Recovery Act (RCRA) was enacted. The site also includes 9 acres of nonhazardous solid waste landfill (Cell III), which received wastes from 1985 to 1989; 25 acres of undeveloped landfill (Cell IV), which is intended for future use; 33 acres of buffer zone between off-site areas and the landfill, and 27 acres used as easements (1).

The APCM site was originally mined for clay to be used in the cement industry. Since 1956, the clay excavations have been backfilled by wastes generated at the nearby Ford Rouge River Plant. A small part of the wastes (i.e., electric arc furnace dust and decanter tank tar sludge) are classified by the U.S. Environmental Protection Agency (EPA) as hazardous. After 1980, in accordance with RCRA legislation, hazardous wastes (including electric arc furnace dust and coke tar sludge) were segregated and separately deposited in a designated hazardous waste management area (Cell I) (2).

Hazardous wastes continued to be disposed of in Cell I through 1983. That cell, which consisted of an 8-acre excavation extending to a depth of 35 feet below grade, was closed in 1986. Closing of Cell I included the following: 1) installation of a leachate collection system; 2) coverage (capping) with a synthetic liner and clay; 3) installation of a drainage layer in the cap; and 4) grading and planting of a vegetation cover over the capped area (2).

A number of improvements have been made at the APCM site. In 1980, projects were initiated to control leachate migration and surface water run-on and runoff.

Those projects included installing a system of french drains and a surface water drainage system around the site's perimeter, a perimeter dike system, an interior dike system, and monitoring wells. Those site improvement projects were completed by 1982 (2).

Additional site improvements were made in 1987, including installation of a leachate collection system in the old landfill unit, which had received waste between 1956 and 1985. That was necessary because of buildup of leachate within the landfill. The new collection system discharges leachate into the sanitary sewer (2).

Disposal activities at the APCM site were at first regulated in accordance with a permit issued by Ecorse Township in 1956. Since that time, waste disposal activities at the APCM site have been regulated by the State of Michigan through its hazardous waste disposal legislation -- the Michigan Public Act 87 (1965), as amended by Act 89 in 1971, and by Act 641 in 1979. The facility operated under interim status until a Michigan Public Act 64 license was issued in May 1989; a Resource Conservation and Recovery Act (RCRA) permit became effective in June 1989 (2). That permit approved operation of a hazardous waste disposal cell (Cell II). Currently, that cell is not receiving wastes; it will probably begin operating in the summer of 1993.

Residents living near the APCM site expressed concerns to their local officials about health hazards potentially associated with the site. Because of those community concerns, two petitions for a public health assessment of the site were submitted to ATSDR. The first was submitted on December 21, 1988, by the Mayor of Melvindale, Michigan; the second petition was submitted on January 5, 1989, by the City Council of Dearborn, Michigan.

B. Site Visits

On May 25, 1989, the Agency for Toxic Substances and Disease Registry (ATSDR) staff conducted a site visit at APCM. During the visit, observations were made about on- and off-site conditions, including land use in areas on site and adjacent to the site; the ease of site access; the proximity of residential areas; the presence of on-site physical hazards; and the general physical characteristics of on- and off-site areas.

Access to the site is restricted by an 8-foot, chain link fence surrounding the site. Site access is also somewhat restricted by the 6- to 8-lane highways surrounding the site on the western, southern, and eastern sides. The northern side of the site is bordered by a 3-lane road. Security at the site is maintained by security officers,

who patrol the site 24 hours a day.

Inactive parts of the site, particularly the closed and capped hazardous waste area (Cell I), are covered with vegetation, primarily grasses. Ongoing soil excavation and other construction activities are taking place on non-vegetated parts of the site.

On February 11, 1991, ATSDR staff made a second visit to the Allen Park Clay Mine site to obtain additional information about the site conditions and operations. ATSDR staff also held a public availability session about the Allen Park Clay Mine site at the City Hall of Dearborn, Michigan. Representatives from the Michigan Department of Public Health (MDPH) and the Michigan Department of Natural Resources (MDNR) assisted ATSDR in conducting the session. The public availability session provided an opportunity for ATSDR staff to meet with members of the local community in order to discuss ATSDR plans for a public health assessment of the site, and to obtain information on community health concerns related to the site. Information about community health concerns is provided in the Community Health Concerns section of this public health assessment.

C. Demographics, Land Use, and Natural Resource Use

Demographics

The Allen Park Clay Mine site is in the Detroit metropolitan area, approximately 8 miles southwest of downtown Detroit. The site is in a northern section of the City of Allen Park and borders Dearborn to the northwest and Melvindale to the southeast. Population and housing data for the census tract containing the site and for surrounding census tracts (which comprise parts of the cities of Allen Park, Dearborn, and Melvindale) are found in Tables 1 and 2 (all tables are in Appendix B).

Residential areas are in the census tract that contains Allen Park Clay Mine. Those residential areas are southwest of the site. The 1990 population of the tract was 2,270; nearly 91% of the population was white. Only 8.6% were under age 10; 20.6% were age 65 or older. Those figures suggest the presence of large numbers of retirees, possibly including some long-term-care patients at the Veterans Administration Hospital in Dearborn. There were a total of 827 households in this tract (average of 2.74 persons per household). Nearly 75% of housing units were owner occupied; that relatively high percentage indicates a nontransient population.

One of the petitioners for the public health assessment was the Mayor of

Melvindale. Melvindale had a 1990 population of 11,235, which was a decline of 8.8% from the 1980 population of more than 12,300. In 1990, approximately 93.6% of Melvindale residents were white. Thirteen percent of the population were under age 10; 14.1% were age 65 or older. Approximately two thirds of occupied housing units in Melvindale were owner occupied, again indicating a nontransient population. The 1990 median value of owner- occupied housing units was approximately $38,000; median monthly rent paid by renters was $342; those figures are extremely low, particularly for a community in a major metropolitan area.

A census tract south of the site contains part of the City of Allen Park. That tract had a 1990 population of 6,709; 98% were white. More than 20 percent were age 65 or older. Nearly 90 percent of households were owner occupied; the median value of owner occupied units was just under $57,000.

Two census tracts that are part of the City of Dearborn are west of the site. Those tracts had a total 1990 population of 6,215. As in the other areas, nearly all residents were white. More than 20% were age 65 or older. More than 94% of the 2,459 households were owner occupied. Median value of homes was approximately $75,000.

Land Use

Institutional land use near the site includes the Veterans Administration Hospital immediately southwest of the site and a number of elementary and secondary schools within 1 mile of the site (4).

Except for home gardens, there is no agricultural land use within 1 mile of the site. Recreational land use in the site vicinity includes the Rouge River Park, which is about one-half mile to the north (4).

Located near the APCM site are numerous industrial facilities, including the Ford Rouge River Plant about a quarter mile north of the site. Other industrial areas are within 1 mile northwest, south, and east of the site. An especially large industrial area of more than 500 acres is 1.25 miles northeast of the site.

Natural Resources

Two aquifers, called shallow and deep, are in the site vicinity. The uppermost part of the shallow aquifer generally lies within 10 feet of the ground surface. The deep aquifer is approximately 70 feet below the ground surface in the site area. Groundwater from the deep aquifer is highly mineralized. According to staff from

the Wayne County Department of Public Health and the Michigan Department of Natural Resources, there are no known water wells within 1 mile of the site. Water for residences and commercial users in the site vicinity is provided by the City of Detroit (4,5,6).

The subsurface soil profile at the APCM site consists of upper sands from 3 to 7 feet thick, replaced by fill in some areas. That layer is underlain by a silty clay layer from 65 to 70 feet thick; it in turn overlies the lower sand layer, which ranges in thickness from 3 to 6 feet or more. Groundwater in the lower sands is under artesian pressure, with piezometric levels at or above the ground surface. Those conditions indicate a confined aquifer with an upward hydraulic flow gradient. In other words, the groundwater attempts to flow from the lower sand upward through the clay deposit to the upper sand (4,5).

Storm water runoff from the APCM site enters the Allen and Tyre storm water drains. These drains originate on site and then exit to the east. They run through residential areas of Melvindale before combining into one drain (called Allen drain) which discharges into the Rouge River. The Rouge River lies about one mile north of the APCM site.

D. Health Outcome Data

Using local and state health databases, it may be possible to determine whether certain health effects are higher than expected in the APCM area. This section identifies the relevant, available databases; they are evaluated in the Public Health Implications section of this public health assessment.

Two public opinion surveys were conducted in 1989 and 1990 by residents of the Snow Woods community. Those surveys included self-reporting of health problems.

Two descriptive studies of cancer incidence (cases of newly diagnosed cancer occurring during a specified period) for communities surrounding the site were completed in 1983 and 1989 by the Michigan Cancer Foundation (MCF), Division of Epidemiology (7,8). Health outcome data used in those analyses were obtained from the Metropolitan Detroit Cancer Surveillance System (MDCSS), a cancer registry sponsored by the Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute, U.S. Public Health Service.

ATSDR searched for data pertaining to mortality (death) and respiratory diseases in communities surrounding the site. Such data were available at the county level but do not appear to exist at a smaller community level.

As part of this public health assessment, ATSDR analyzed the incidence of brain and liver cancers in communities surrounding the APCM site. The data (new cancer cases first diagnosed between 1973 and 1989) were obtained from the MCF Division of Epidemiology.

A review of the previously described surveys, studies, and analyses is contained in the Public Health Implications section of this public health assessment.

COMMUNITY HEALTH CONCERNS

ATSDR believes identifying and addressing community health concerns relevant to a particular site are critically important to the public health assessment. This section identifies community concerns associated with the APCM site. ATSDR responds to the concerns in the Public Health Implications section of this document.

Community health concerns related to the Allen Park Clay Mine site were expressed by the petitioners and by area residents who attended a public availability meeting for the site in February 1991. In addition, community health concerns were collected from state and local authorities. Community health concerns are summarized as follows:

1. Is the incidence of cancer (including prostate, brain, bladder, colon, and bone cancers, and leukemia) in the Snow Woods, Melvindale, and Allen Park communities higher than in other parts of Michigan?

2. Are the incidences of adverse health outcomes (death, asthma, allergies, emphysema, cirrhosis of the liver, congenital heart defects, and hepatitis) in Snow Woods, Melvindale, and Allen Park higher than in other parts of Michigan?

3. How will local residents with preexisting adverse health conditions (such as asthma) be affected by this landfill?

4. Could other industries be contributing to environmental contamination in the area?

5. Could air particulate matter (silt) that regularly accumulates on residential windows and cars in nearby areas be harmful to health?

Local residents have also expressed concerns that clay adhering to the tires of trucks leaving the site was being scattered along Oakwood Boulevard which runs through areas of Allen Park, Dearborn, and Melvindale. In response to those concerns, Ford Motor Company installed an on-site tire wash facility. That action appears to have alleviated the concerns.

Area residents have also expressed concern about the possibility of decreasing property values because of the presence of a landfill in the area. Because that concern is not related to public health, but to economics, ATSDR cannot address it in this public health assessment.

ENVIRONMENTAL CONTAMINATION AND OTHER HAZARDS

The tables in Appendix B list the contaminants identified in each environmental medium at the site. The contaminants are evaluated in subsequent sections of this public health assessment to determine whether exposure to them has public health significance. ATSDR selects and discusses contaminants using several types of information, including these:

- concentrations on and off site;
- the quality of field and laboratory data and sample design;
- comparison of on- and off-site concentrations to health assessment comparison values for cancer and noncancer endpoints; and
- community health concerns.

Because a contaminant is listed in the tables does not mean it will cause adverse health effects if exposure occurs at specified concentrations. Rather, the list indicates which contaminants will be further evaluated in this public health assessment. The potential for adverse health effects resulting from exposure to contaminants of health concern is discussed in the Public Health Implications section.

Comparison values for ATSDR public health assessments are contaminant concentrations in specific media used to select contaminants for further evaluation. ATSDR and other agencies developed those values to provide guidelines for estimating the media concentrations of a contaminant that are unlikely to cause adverse health effects, given a standard daily ingestion rate and standard body weight. See Appendix C for a description of the comparison values used in this public health assessment.

A. On-Site Contamination

Waste Material

Surface and subsurface soil have not been sampled at the site, and limited information is available to define waste types and concentrations in subsurface waste cells. However, the Michigan Department of Natural Resources (DNR) compiled a summary of waste descriptions for materials disposed of or suspected to have been disposed of in the landfill before 1982 and identified the following sources for those waste materials:

1. fly ash - recovered from waste gases of power stations burning pulverized coal;
2. decanter tank tar sludge - from cooling coke oven gases;
3. coke tar sludge and breeze (fine screening from crushed coke);
4. foundry sand and slag - from iron foundries;
5. basic oxygen furnace dust and kish - generated during steel- and iron-making processes;
6. blast furnace dust and filter cake - recovered from waste gases from iron-making operations;
7. waste water treatment sludge - from steel operations;
8. electric furnace dust; and
9. inorganic material - from glass manufacturing.

Those waste materials typically contained inorganic chemicals (e.g., cadmium, chromium, and lead) and organic compounds (e.g., naphthalene) (2).

The following subsections summarize data compiled by Ford Motor Company and submitted in the *RCRA Facility Investigation Phase I Environmental Monitoring Report, Allen Park Clay Mine Landfill* (2).

Leachate

Results of leachate samples taken in 1984 and 1985 from the landfill areas (Table 3) show high concentrations of cadmium, chromium, lead, and naphthalene, a noncarcinogenic polycyclic aromatic hydrocarbon (PAH). The leachate is currently discharged to the municipal sanitary sewer system. A clay dike on the perimeter of the landfill has contained leachate on site since 1982 (2).

Surface Water

The APCM site has a perimeter drainage system that empties into two major drains

from the site, the Allen Drain northeast of the site, and the Tyre Drain southwest of the site. The site also has a treatment-and-settling pond that collects storm water runoff from the site and discharges into the perimeter drainage system that eventually empties into the Allen and Tyre drains (2).

Very few surface water samples have been collected from the site drains (Allen and Tyre) and from the treatment pond that discharges into the site perimeter drainage system. Results of sample analyses are shown in Table 4. Allen Drain was analyzed for chromium and lead only. Levels of chromium detected were less than ATSDR's comparison value. The detection limit for lead (50 ppb), however, was above ATSDR's lead comparison value. The same was true for the detection limit used for lead in Tyre Drain. Levels of carcinogenic and noncarcinogenic PAHs in Tyre drain exceeded comparison values and will be further evaluated. Concentrations of cadmium and lead in the treatment pond exceeded ATSDR's comparison values. The detection limits used to analyze for carcinogenic and noncarcinogenic PAHs in the treatment pond were above ATSDR's comparison values (2,9).

Sediment

Sediment samples were collected from Tyre Drain and from the on-site treatment pond that collects surface water runoff from the site (Table 5). The levels of cadmium and total chromium in the pond and Tyre Drain did not exceed their respective comparison values. In the treatment pond, levels of noncarcinogenic PAHs did not exceed comparison values while levels of carcinogenic PAHs did exceed comparison values. No comparison values were available for lead and zinc (2,9).

Groundwater

Ford Motor Company has installed groundwater monitoring wells at the APCM site. Sampling of those wells has shown that groundwater is contaminated with cadmium, total chromium, lead, zinc, and noncarcinogenic PAHs. Table 6 shows the maximum concentrations of groundwater contaminants detected and the associated comparison values. Levels of cadmium, chromium, zinc, and lead exceeded ATSDR's comparison values and will be further evaluated in the Pathways and/or Public Health Implications sections of this public health assessment (2,4).

Air

Air monitoring data were collected in 1986 when Cell I was being closed and while

soil was being excavated and moved. The air samples were collected using high-volume sampling units; particulate concentrations of lead, cadmium, and chromium were determined using atomic absorption spectrophotometry. The samples were analyzed only for the inorganic contaminants shown in Table 7. Levels of particulates in the samples exceeded comparison values; the chromium detection limit was above ATSDR's comparison value (2).

B. Off-Site Contamination

Off-site environmental monitoring data for all media (air, soil, surface water, groundwater, sediment) were not available for areas adjacent to the APCM site.

C. Quality Assurance and Quality Control (QA/QC)

The conclusions and recommendations made in this public health assessment were arrived at using data developed by the Ford Motor Company and reviewed by EPA and the State of Michigan. When descriptions were provided, the quality assurance and quality control (QA/QC) measures appeared to be consistent with measures normally taken during environmental sampling and analysis. The data are assumed to be accurate within the limits of the QA/QC procedures used.

D. Physical and Other Hazards

The APCM site, which continues to operate as a waste disposal facility, requires the use of heavy equipment. On-site earth- moving equipment and on-site soil excavations may pose physical hazards to site trespassers, especially small children. Because access to the site is restricted, the likelihood of human contact with on-site physical hazards is reduced.

Toxic Chemical Release Inventory

The Toxic Chemical Release Inventory (TRI) is an on-line database, maintained by EPA, containing information (self-reports from chemical manufacturers and other companies throughout the United States) about more than 320 different substances released from facilities into the environment between 1987 and 1990. ATSDR conducted a TRI search for Wayne County, Michigan, and for the Allen Park, Dearborn, Dearborn Heights, and Melvindale communities for the 1987, 1988, 1989, and 1990 reporting years. Environmental releases of cadmium, chromium, lead, and zinc were reported for all four years in Wayne County, as well as in the communities surrounding the Allen Park Clay Mine site. Releases of naphthalene, a noncarcinogenic PAH, were reported during those years in Wayne County, but not in the communities surrounding the site. Releases of carcinogenic

PAHs, which are also contaminants of concern at the site, are not reported to TRI. A summary of air releases is shown in Table 8.

PATHWAYS ANALYSES

To determine whether nearby residents are exposed to contaminants from a particular site, ATSDR evaluates the environmental and human components that lead to human exposure. That pathways analysis considers five elements: (1) sources of contamination, (2) environmental media in which the contaminants may be present or from which contaminants may migrate, (3) points of human exposure, (4) routes of human exposure such as ingestion, inhalation, or dermal absorption, and (5) exposed populations.

ATSDR identifies exposure pathways as completed or potential. For a completed exposure pathway to exist, the five elements must exist, and there must be evidence that people have, are, or could be exposed to a contaminant. A potential pathway exists when at least one of the five elements is missing, but could exist (e.g., people may have been exposed in the past, may now be exposed, or may be exposed in the future). A pathway is eliminated when one of the five elements is missing and will never exist. Completed and potential pathways may be eliminated when they are unlikely to exist, or to be significant. All completed, potential, and eliminated exposure pathways at the Allen Park Clay Mine site are shown in Table 9.

A. Completed Exposure Pathways

No completed pathways were identified; one or more elements of the pathway analysis were missing for each medium evaluated.

B. Potential Exposure Pathways

There are several potential human exposure pathways at the APCM site. Chemicals were detected in on-site environmental media at levels that may be of public health concern if people have been, are now, or could be exposed to them. There is a potential for human exposure via storm water runoff, sediments in the storm water ditches, and air. In the past, leachate may have been a potential exposure pathway. The potential exposure pathways are described in the following paragraphs.

Storm Water Runoff

On-site storm water runoff is collected in a drainage system (consisting of perimeter drains and a treatment pond) that discharges to the Allen and Tyre drains. Those drains leave the site under a highway and then run through residential neighborhoods. The two drains merge before discharging to the Rouge River.

On-site contaminants may have entered storm waters and migrated off site through the drainage system. Only limited on-site storm water data were available for ATSDR's evaluation (Table 4). The limitations of those data are discussed in the Environmental Contamination section of this public health assessment. Because no off-site storm water data were available, ATSDR assumed (using a worst-case scenario) that off-site storm waters were as contaminated as on-site storm water prior to installation of a leachate collection system. Using that assumption, a potential exposure pathway exists for children who play in the Allen and Tyre drains; they may inadvertently ingest or have skin contact with heavy metals and PAHs. Exposures may have occurred in the past, currently, or may yet in the future; however, no information is available on the magnitude, frequency, and duration of exposure for any of those time frames.

Leachate

Leachate from the landfill area was a past (before 1982) potential exposure pathway. Before the leachate collection system was installed and the landfill capped, leachate probably discharged into the Allen and Tyre drains and was mixed with surface water drainage that flowed past residential neighborhoods to the Rouge River. Children who played in the drainage ditches could have been exposed to metals and PAHs through dermal contact and inadvertent ingestion. No information is available on the concentrations of contaminants (no off-site sampling data are available) or the frequency or duration of exposure.

Sediments

As were surface water data, on-site sediment data are also limited (Table 5). The limitations of the data are discussed in the Environmental Contamination section. Contaminated surface soils may have washed into the drainage system during storms and migrated off site through the Allen and Tyre drains, which pass through residential neighborhoods to the Rouge River. Using the same hypothesis as with surface water, there is a potential pathway (dermal contact and inadvertent ingestion of carcinogenic PAHs) for children who play in the Allen and Tyre drains. Exposure may have occurred in the past, may now be occurring, or may occur in

the future. No information is available on the magnitude, frequency, and duration of exposures.

Air

The primary mechanism by which contaminants at the site may be released to the air is by generation of fugitive (airborne) dusts from surface soils or from subsurface soils or waste materials during excavation and transport of soil at the site. Dust generation may be enhanced during windy conditions. Once airborne, contaminants may migrate to off-site areas. Prevailing winds in the site vicinity blow from the southwest (Figure 4 - Wind Rose).

Available on-site air sampling data (Table 7) were collected in 1986 during soil excavation associated with the closure of Cell I. Closing operations released contaminated soil particulates into the ambient air; on-site workers may have been exposed by inhalation, dermal contact, and incidental ingestion to air particulates, if proper personnel protective measures were not followed. The sampling data, however, are not likely to be indicative of day-to-day, on-site ambient air contamination. No long-term, on-site ambient air monitoring data are available for evaluation by ATSDR; therefore, the consequences of on-site exposure to contaminated ambient air are unknown. Additional monitoring of on-site ambient air during normal activities is needed to determine if contaminated fugitive dusts are a problem for workers not wearing personal protective equipment.

The nearby communities are separated from the APCM site by divided highways. Because no off-site air monitoring data are available, it is not known if contaminated particulates from on-site activities during 1986 were released in sufficient quantities to affect nearby communities. If so, then nearby residents may have been, may now be, and could in the future be exposed to airborne site contaminants through dermal contact, incidental ingestion, and inhalation.

The permit for a new waste cell (on site) specifies that periodic air sampling be conducted while the site is operating. When available, those analytical data should be reviewed to ensure that air particulate and contaminant concentrations are not at levels that will cause illness or disease.

C. Eliminated Exposure Pathways

Groundwater

On-site groundwater is contaminated with heavy metals and PAHs; people who use the water could be exposed to contaminants through dermal contact,

inhalation of volatilized contaminants, and ingestion. However, available information does not indicate that human exposure to contaminated groundwater is occurring; municipal water serves the area, and private wells are no longer used. If private wells are no longer used, groundwater is an eliminated exposure pathway.

Because of the contamination in the groundwater, ATSDR has attempted to ensure that private wells are not used in the APCM area. The hydrogeologic study of the Allen Park Clay Mine stated that there were no private wells in the vicinity of the site (4). ATSDR also contacted the state health department about private well use; there were no reports or records of private wells in the area (6). In addition, the deep aquifer is reported to be highly mineralized, rendering the water unsuitable for drinking water or other household use. However, in spite of indications that area well water is not being used, it is conceivable that wells may have been a source of water during earlier developmental periods of the area. Therefore, it is possible that some older private wells still exist.

Hydrogeologic conditions at the site make it unlikely that wastes from the site could contaminate the groundwater. Those conditions, particularly the upward hydraulic flow gradient and the thickness (25 feet or greater) of the low permeability clay layer underlying the site, make it difficult for contaminants from the site to travel downward to the deep aquifer (4). Although contaminants were detected in on-site groundwater in the deep aquifer, the highest levels of lead and cadmium were detected in monitoring wells hydrologically upgradient of the site (2). ATSDR could not determine if the APCM site is a source of groundwater contaminants.

Leachate

Leachate was eliminated as a current or future exposure pathway because it is currently discharged to the sanitary sewer, effectively eliminating the potential for the public to be exposed. The leachate is treated at the municipal waste water treatment plant.

PUBLIC HEALTH IMPLICATIONS

The following sections (Toxicologic Evaluation, Health Outcome Data Evaluation, and Community Health Concerns Evaluation) discuss the public health implications of the potential human exposure pathways of concern at the APCM site. The toxicologic implications of the site-related contaminants are evaluated by considering the following factors: (1) the types and concentrations of contaminants

detected in environmental media at the site; (2) the routes by which people may be exposed to those contaminants; and (3) the duration (how long) and frequency (how often) of potential human exposures to the contaminants.

The health outcome data are evaluated using information on the toxicologic implications to determine, to the extent possible, whether the occurrence of adverse health outcomes and associated community health concerns may be related to human exposures to contaminants.

At the Allen Park Clay Mine (APCM) site, there are no known human exposures; that is, there are no completed human exposure pathways. However, there are potential exposure pathways (particularly during excavation and construction) for on-site workers, children, and nearby residents. Exposure routes include inhalation, dermal contact, and incidental ingestion of contaminants.

A. Toxicologic Evaluation

The evaluation of toxicologic effects involves estimating the amount (or dose) of contaminants that an individual might come in contact with on a daily basis. The estimated exposure dose is then compared to established comparison values or health guidelines. People who are exposed for some crucial length of time to contaminants of concern, at levels above comparison values, are more likely to have an associated illness or disease.

Health-based comparison values are developed for contaminants commonly found at hazardous waste sites (see Appendix C). Examples are the ATSDR minimal risk level (MRL) and the EPA reference dose (RfD). The MRL and RfD are estimates of daily human exposure to a contaminant below which adverse health effects are unlikely. MRLs are usually generated for the ingestion and inhalation routes of exposure, and for acute, intermediate, or chronic lengths of exposure (i.e., exposures less than 14 days, 15 to 365 days, or more than 365 days, respectively). ATSDR explains many of those health guidelines in Toxicological Profiles, which also provide chemical-specific information on health effects, environmental transport, and human exposure. ATSDR Toxicological Profiles were consulted for the toxicological evaluations discussed in the following paragraphs (10,11,12,13,14,15).

Surface Water and Sediment

Collection systems put in place in 1982 and 1987 discharge leachate runoff to the city sanitary sewer system. However, it is possible that people were exposed in the past to contaminants discharging from the site. Contaminants (i.e., cadmium,

chromium, lead, and naphthalene) were detected in on-site storm water and sediment (PAHs, cadmium, chromium, lead, and zinc) during sampling conducted between 1984 and 1989. Levels of those contaminants in leachate runoff and sediment do not exceed comparison values by a substantial margin, except for carcinogenic PAHs in Tyre drain water (Table 4). Restricted access to the site limits exposure to on-site sediment and storm water. Because contact with off-site sediment or water would be limited (and probably inadvertent), the resulting estimates of human exposure are not of public health concern.

Air (Particulates)

The most likely pathway by which nearby residents and on-site workers may be exposed to contaminants at the APCM site is air. The primary mechanism by which contaminants could be released to air is generation of fugitive (airborne) dusts from surface or subsurface soils during soil excavation at the site.

In 1986, air monitoring data were collected during the closure of Cell I (Table 7). The maximum total suspended particulate (TSP) levels measured were greater than the EPA primary Ambient Air Quality Standard (AAQS). Air samples were also shown to contain cadmium and lead, but at levels below public health concern. Dust control measures are currently being used on site and should minimize dust generation and the potential for people to be exposed to dust.

The APCM site RCRA facility investigation Phase I environmental monitoring report (2) includes an air monitoring program that calls for quarterly air sampling for TSP, lead, cadmium, and chromium. Additional sampling for hexavalent chromium, nickel, copper, phenols, and cyanide is required when TSP levels exceed 150 $\mu g/m^3$. ATSDR concurs with the required air monitoring program. However, consideration should be given to sampling for PAHs, which have been detected in sediment and surface water on site. Supplementary information on PAHs, is provided in Appendix E.

Groundwater

Data from sampling of on-site monitoring wells identified metals in both the shallow and deep aquifers (Table 6). The source of those contaminants is not known; however, the concentrations of the contaminants are such that chronic exposure would have serious public health implications. No off-site groundwater monitoring data were available for ATSDR's review; therefore, it is not known if contaminants in off-site groundwater are at levels of public health concern. If the worst-case hypothesis is accepted, i.e., that off-site groundwater contaminant concentrations are equal to on-site groundwater contaminant concentrations, then

off-site groundwater monitoring should be conducted to disprove the hypothesis, or efforts should be made to ensure that no private well water is used.

B. Health Outcome Data Evaluation

The evaluation of health outcome data may give a general picture of the health of a community, or it may confirm the presence of excess disease or illness. However, elevated rates of a particular disease may not be caused by hazardous substances in the environment. Other factors, such as socioeconomic status and personal habits, also may influence the development of disease. In contrast, even if elevated rates of disease are not found, a contaminant may still have caused illness or disease.

Surveys Conducted By the Community

Residents of the community of Snow Woods conducted two surveys in 1989 and 1990 to collect information on the numbers and types of adverse health effects reported by local residents. The surveys reported different types of cancer and adverse reproductive outcomes. Detailed discussions of the two surveys are included in Appendix D.

ATSDR was provided the health information collected during the two community-conducted surveys. The Agency determined that limitations of the methods and data collected prevented ATSDR from conducting statistical analyses to determine the occurrence of excess adverse health effects. Consequently, ATSDR could not make general conclusions about excess cancers or adverse reproductive outcomes using those surveys.

Although the surveys could not establish definitive answers about excess cancers or adverse reproductive outcomes, they did identify diseases of concern in the community and helped focus ATSDR's efforts in investigating other health outcome data. The surveys and other community health concerns were also considered during the development of recommendations for public health actions and future health investigations.

Cancer Incidence Investigations

Cancer incidence is a community health concern associated with the APCM site. The Michigan Cancer Foundation (MCF) conducted two studies of cancer incidence for the communities surrounding the site. The first study, completed in 1983, evaluated the occurrence of cancer (from 1973 to 1981) in two census tracts that comprise the Snow Woods area of Dearborn. The second study, completed in

1989, was a followup to the first. It evaluated cancer incidence (from 1973 to 1986) in several census tracts that comprise the Snow Woods, Allen Park, and Melvindale communities (6).

MCF provided ATSDR with both crude (not analyzed) data and the analyzed data summaries from those studies. MDPH also provided ATSDR with additional brain cancer incidence data reported in the MCF database (for the years 1987 to 1990) for the same geographic areas included in the previous MCF studies. Table 10 summarizes the brain cancer incidence data from the two MCF studies (1973-1981 and 1973-1986) and the brain cancer cases reported by MCF (1987-1989) for the three communities.

Table 10 - Summary of Brain and Liver Cancer Cases (1973 to 1989)[a]

Study (Time Period)	Number of Cancer Cases			
	Snow Woods	Melvindale	Allen Park	Dearborn Heights
1983 Study (1973-1981)	12 Brain[b] 3 Liver[b]			
1989 Study (1973-1986)	16 Brain[b] 3 Liver	9 Brain 0 Liver	22 Brain 13 Liver	
1990 Data[c] (1973-1989)	22 Brain 3 Liver	14 Brain 4 Liver	30 Brain 15 Liver	8 Brain 3 Liver
(1973-1978)	7 Brain 2 Liver	1 Brain 1 Liver	11 Brain 5 Liver	4 Brain 3 Liver
(1979-1984)	7 Brain 1 Liver	5 Brain 1 Liver	7 Brain 6 Liver	2 Brain 0 Liver
(1985-1989)	8 Brain 0 Liver	8 Brain 2 Liver	12 Brain 4 Liver	2 Brain 1 Liver

[a] Data obtained from the Michigan Cancer Foundation.

[b] Cancer incidence rates calculated from these cases were reported as statistically significant in the Michigan Cancer Foundation studies (7,8).

[c] Cancer incidence rates were not determined for these cases.

First MCF Cancer Study

In the initial MCF study, all cancer cases diagnosed by place of residence from 1973 to 1981 (with the exception of nonmelanoma skin cancers) were identified by the Michigan Cancer Foundation Cancer Surveillance System (6). Cancer rates of residents of the Snow Woods neighborhood were compared with those of the City of Dearborn, Wayne County, and the tri-county area (Wayne, Oakland, and Macomb counties) to determine whether cancer rates in Snow Woods were higher than the rates for populations with similar demographic characteristics not located near the site. Because the populations of the Snow Woods and Dearborn neighborhoods were predominantly white (more than 98%), only cancer incidence rates for the white population segments of the control populations were used for comparison. Comparisons were also made by age and sex.

Of the 31 cancer site groups analyzed, results of the study indicated that the only statistically significant excesses of cancer (those that cannot be explained by chance) consistently found in the Snow Woods population during the 1973 to 1981 study period were brain cancer in both men and women and liver cancer in women. Results of the study did not take into account place of residence, occupational history, smoking, alcohol use, and other risk factors that may be related to cancer incidence.

Second MCF Cancer Study

The second MCF study, completed in 1989, provided a followup to the initial study. It contained additional information on cancer incidence for 1982 through 1986 for residents of the Melvindale and Allen Park communities as well as for residents of the Snow Woods neighborhood (7). Place of residence was determined by census tract and included a total of 10 tracts comprising the communities of Snow Woods, Melvindale, and Allen Park. The comparison communities for the study were the City of Dearborn (excluding the Snow Woods neighborhood) and Wayne County (excluding the three study communities). Comparisons were made using only the white segment of the reference population. Adjustments were made for age and sex differences between the study and comparison populations.

The study compared the two groups with regard to their incidence of 38 different types of cancer. To obtain occupational, smoking, and residential histories, the relatives of the 16 Snow Woods residents with brain cancer were telephoned by MCF and asked to respond to a number of questions.

Results of the study indicated that between 1973 and 1986, 2,519 cancer cases were diagnosed among residents of the three study areas (Snow Woods, Melvindale, and Allen Park). Using the Dearborn comparison population, 2,638 cases were expected (the number of cancer cases that should occur if the three study areas had the same cancer incidence as the City of Dearborn). Therefore, the study area population had 5% fewer cases of cancer than were expected, based on cancer incidence rates for the City of Dearborn. Cancer cases for the study area were 8% lower than the number expected (2,743) based on Wayne County cancer incidence rates.

From the analysis of 38 cancer types, the only higher-than-expected cancer rate was seen in Snow Woods; residents there experienced 16 cases of brain cancer over the 14-year study period; 6 cases were expected based on incidence rates of the two comparison populations. In order to collect additional information about the 16 brain cancer cases, a telephone survey was conducted by MCF; two surviving individuals and the relatives of 12 persons who died of brain cancer were interviewed. The relatives of two persons who died of brain cancer could not be found. The survey obtained information on place of residence, smoking history, and occupation.

Results of the telephone survey indicated that 9 of the 16 persons with brain cancer had lived near the site for 20 years or more (that duration is significant because cancer usually develops many years after exposure). Of the seven men with brain cancer, all but one smoked; five of the seven had worked in occupations with exposure to automobile engine exhaust for lengths of time ranging from 3 to 42 years. Only one of the five women with brain cancer smoked; among the women, there was no consistent occupational history.

ATSDR Cancer Evaluation

The cancer incidence data from the two MCF studies indicate that there has been a consistent, higher-than-expected number of cases of brain cancer in the Snow Woods community between 1973 and 1986.

ATSDR requested the most current information on the number of brain and liver cancers in the study communities from 1973 to 1990. Table 11 shows that an excess in brain cancer rates was seen in Snow Woods from 1973 to 1990 (the most recent year for which cancer incidence data are available). Table 11 also shows that liver cancer rates in Allen Park, Snow Woods, and Melvindale are comparable to Wayne County and other surrounding counties (Macomb and Oakland).

Table 11. Age-adjusted brain and liver cancer incidence rates (per 100,000) near APCM site for the period 1973-1990.

Population	Brain	Liver
Allen Park	5.73	2.88
Snow Woods	14.17*	1.70
Melvindale	6.22	1.70
Wayne County	4.89	2.68
Tri-County (Macomb, Oakland, and Wayne)	5.39	2.40

Source: *Michigan Cancer Foundation (Division Of Epidemiology)*

** Significantly higher than comparison communities*

Age adjusted: *Age adjusted to the 1970 U.S. population standard population to eliminate age differences among the populations before comparison.*

The available environmental and human health outcome data for the site indicate that although there is an apparent excess number of brain cancers for the period 1973-1990, the excess could not be attributed to the Allen Park Clay Mine site. No completed environmental and human exposure pathways were found for the site. Information known about potential pathways does not indicate that the site contaminants are at concentrations that may be related to an excess occurrence of brain cancer. Alternative factors, such as other environmental, lifestyle, and occupational factors, may have contributed to this observed occurrence of excess cancer in the Snow Woods community (general information about the health concerns is discussed in Appendix E).

C. Community Health Concerns Evaluation

ATSDR has addressed each of the community concerns about health as follows:

1. **Is the incidence of cancer (including prostate, brain, bladder, colon, and bone cancers, and leukemia) in the Snow Woods, Melvindale, and Allen Park**

communities higher than in other parts of Michigan?

Between 1973 and 1986, the cancer incidence in the three areas was similar to the rest of Wayne County except for the elevated brain cancer incidence in Snow Woods. Cancers evaluated by the Michigan Cancer Foundation (MCF) included stomach, colon, rectum, liver, esophagus, small intestine, anus, gallbladder, pancreas, retroperitoneum, nasal cavity, larynx, lung and bronchus, trachea, bones and joints, soft tissues, prostate, testis, breast, cervix, ovary, vulva, kidney, ureter, other urinary system organs, eye, thyroid, melanomas, Hodgkin's disease, non-Hodgkin's lymphomas, leukemia, and ill-defined cancer types. There were 22 cases of brain cancer in Snow Woods over an 18-year study period. No completed human exposure pathways were found for the APCM site, and information known about the potential pathways of concern does not indicate that contaminants are present that may be related to an excess occurrence of brain cancer. Because of the small number of cases and the lack of information on important risk factors for brain cancer (e.g., lifestyle, occupational exposures), there is no explanation for the excess. ATSDR's evaluation showed that only rates of brain cancer in Snow Woods were elevated. To further evaluate the risk of brain cancer in the area, ATSDR's Health Activities Recommendation Panel (HARP) has recommended a community health investigation of brain cancer in communities around the APCM site. ATSDR will collaborate with qualified agencies or institutes during that investigation. More information about brain cancer is provided in Appendix E.

2. **Are the incidences of adverse health outcomes (death, asthma, allergies, emphysema, cirrhosis of the liver, congenital heart defects, and hepatitis) in Snow Woods, Melvindale, and Allen Park higher than in other parts of Michigan?**

Information on mortality rates (death) and occurrence and treatment of respiratory diseases was not available for the communities around the APCM site and therefore could not be evaluated. From its evaluation of the available environmental data, ATSDR found no contaminants related to the site that may contribute to congenital heart defects, cirrhosis of the liver, or hepatitis. Environmental contributions to those diseases are minimal compared with other risk factors, such as infectious diseases, lifestyle, genetic defects, occupational exposure, and alcoholism. Information about health effects related to community concerns is discussed in Appendix E.

3. **How will local residents with preexisting adverse health conditions (such as**

asthma) be affected by this landfill?

Under current conditions, the health of local residents is not expected to be affected by the APCM site because of the lack of a completed exposure pathway. However, additional on-site ambient air monitoring is recommended to ensure that on-site contaminants are not migrating to off-site areas where they could affect public health.

4. **Could other industries be contributing to environmental contamination in the area?**

A review of the EPA Toxic Release Inventory showed that there are other sources of contamination in the Allen Park, Melvindale, and Dearborn Heights areas. In addition, there were more than 200 environmental releases in the heavily industrialized city of Dearborn during the three-year period of 1987-1989. The Toxic Release Inventory Section of this document includes additional information on other sources of contamination.

5. **Could air particulate matter (silt) that regularly accumulates on residential windows and cars in nearby areas be harmful to health?**

Particulates can be detrimental to human health. The particulate matter can be toxic or act as a carrier of an absorbed hazardous substance. It can also interfere with the body's ability to clear the respiratory tract.

A maximum air particulate concentration of 1,089 $\mu g/m^3$ was detected on site during the closing of landfill Cell I. That concentration exceeded the former National Ambient Air Quality Standard for total suspended particulates; the standard was intended to protect public health. However, it is not known if, or at what concentration, particulates migrated to off-site residential areas.

The permit for the new waste cell (Cell II) specifies that on-site air will be periodically sampled while the cell is operating.

CONCLUSIONS

1. The Allen Park Clay Mine landfill is an indeterminate public health hazard because additional information is needed to evaluate possible air exposure pathways. There may have been air exposure pathways in the past. However, there is no information documenting exposure levels or duration.

2. Air monitoring data collected in 1986 indicate that concentrations of inorganic metals (cadmium and lead) are below health-based comparison values; however, there are data gaps for organic compounds (polycyclic aromatic hydrocarbons).

3. On-site groundwater monitoring identified metals at levels that could adversely affect human health if groundwater was consumed. However, because there is no indication that groundwater is used for drinking water, the contaminants are not a public health concern.

4. There is a potential exposure pathway for children who play in the Allen and Tyre drains. Levels of contaminants in storm water runoff and sediments off site were assumed to be the same as levels on site. At those levels, intermittent exposure is not of public health concern.

5. Available health outcome data indicate that there was a statistically significant excess occurrence of brain cancer in men and women (from 1973 to 1986) and of liver cancer in women (from 1973 to 1981) in the Snow Woods community of Dearborn. Recent information (1987 to 1990) on the number of brain cancer cases in the Snow Woods community suggests that the excess brain cancer may have persisted throughout the period (1973 to 1990).

6. Previous health outcome data indicated that, from 1973 to 1981, there was an excess number of liver cancer cases in the Snow Woods community. More recent data indicate that the cancer incidence was not significantly elevated.

7. The available environmental and health outcome data for the site indicate that, although an apparent excess number of brain cancers was observed for the period of 1973-1990, the excess could not be attributed to the APCM site.

RECOMMENDATIONS

A. Recommendations and HARP Statement

Recommendations

1. The permit for a new waste cell (on site) specifies that periodic air sampling be conducted while the site is operating. The monitoring should include analyses for metals, particulates, and organic contaminants of concern, such as PAHs. When available, those analytical data should be reviewed to ensure that air particulate and contaminant concentrations are at levels that will not endanger public health.

2. Because on-site groundwater is contaminated with elevated levels of metals, efforts should be made to monitor groundwater off site, or to ensure that private well water in the area is not used in the future unless treated.

3. Consider additional follow-up activities if data become available suggesting that people have been or are being exposed to site-related contaminants.

HARP Statement

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended, the Allen Park Clay Mine site, Wayne County, Michigan, has been evaluated by the ATSDR Health Activities Recommendation Panel (HARP) to determine if any appropriate follow-up health activities are indicated at this site. There is no evidence that environmental exposures have occurred at this site. However, because of the elevation of brain cancer incidence rates, the panel determined that conducting a community health investigation and health statistics review is indicated. ATSDR will also evaluate any new data or information it receives about this site to determine if additional public health actions are appropriate.

B. Public Health Actions

Actions Undertaken

ATSDR held a public availability meeting on February 11, 1991, at the City Hall of Dearborn, Michigan, with the assistance of representatives from the state

departments of health and natural resources. ATSDR staff discussed community health concerns associated with the Allen Park Clay Mine Landfill.

Actions Planned

1. ATSDR has identified the excess incidence of brain cancer cases in the Snow Woods area for a possible health study and has requested proposals for Agency evaluation. After completion of the study, ATSDR will inform residents about the results, and make additional public health recommendations as appropriate. The implementation of the proposal for a health study will depend on the availability of funds.

2. The Michigan Department of Natural Resources is requiring additional on-site air monitoring when the facility begins receiving hazardous waste.

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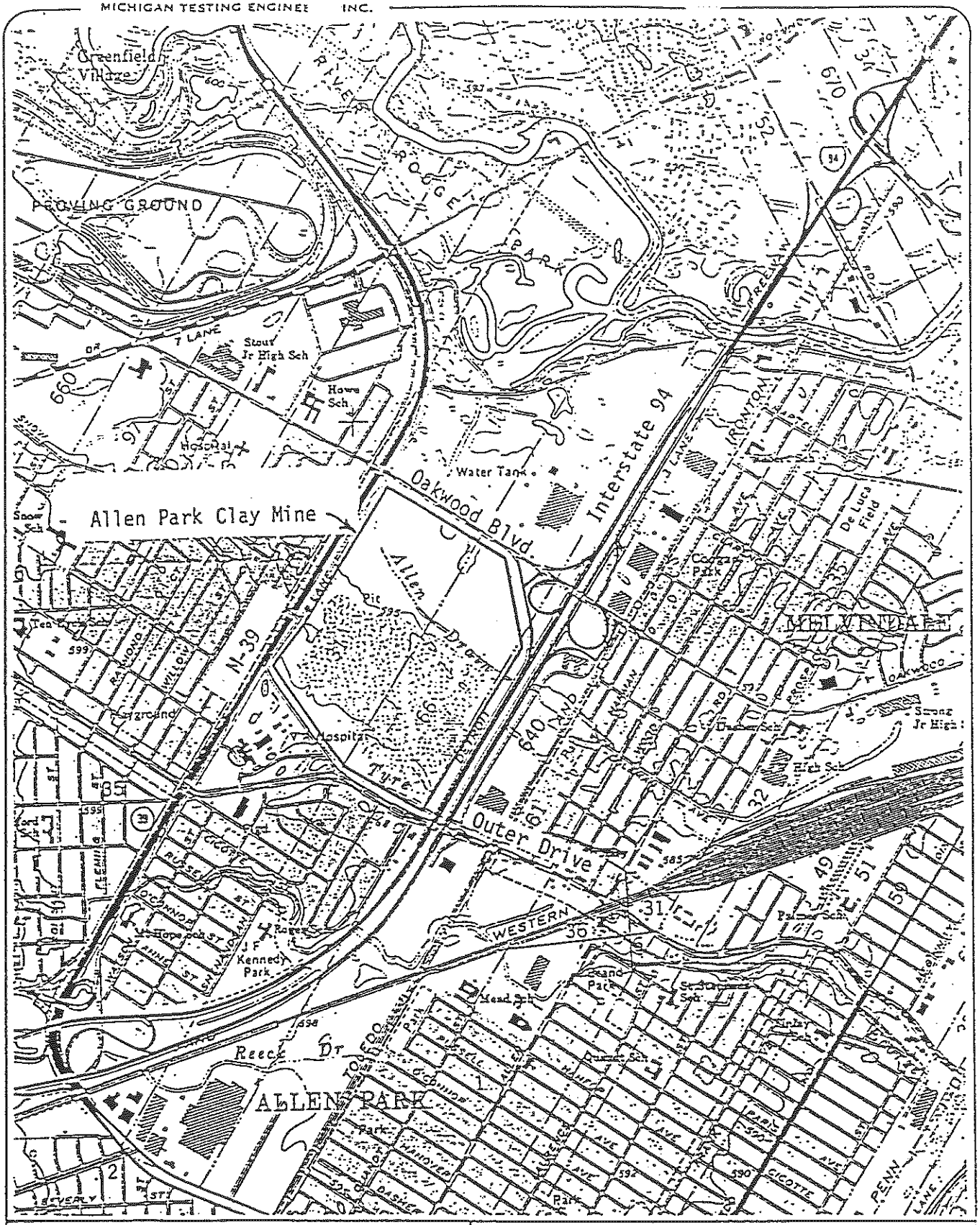
APPENDIX A - FIGURES



0 1000 2000 3000 4000 5000

Scale - Feet
Contour Interval 5 Feet
Datum is Mean Sea Level

Allen Park Clay Mine
Disposal Landfill
Allen Park, Michigan
Wayne County

Figure 1
Area Map

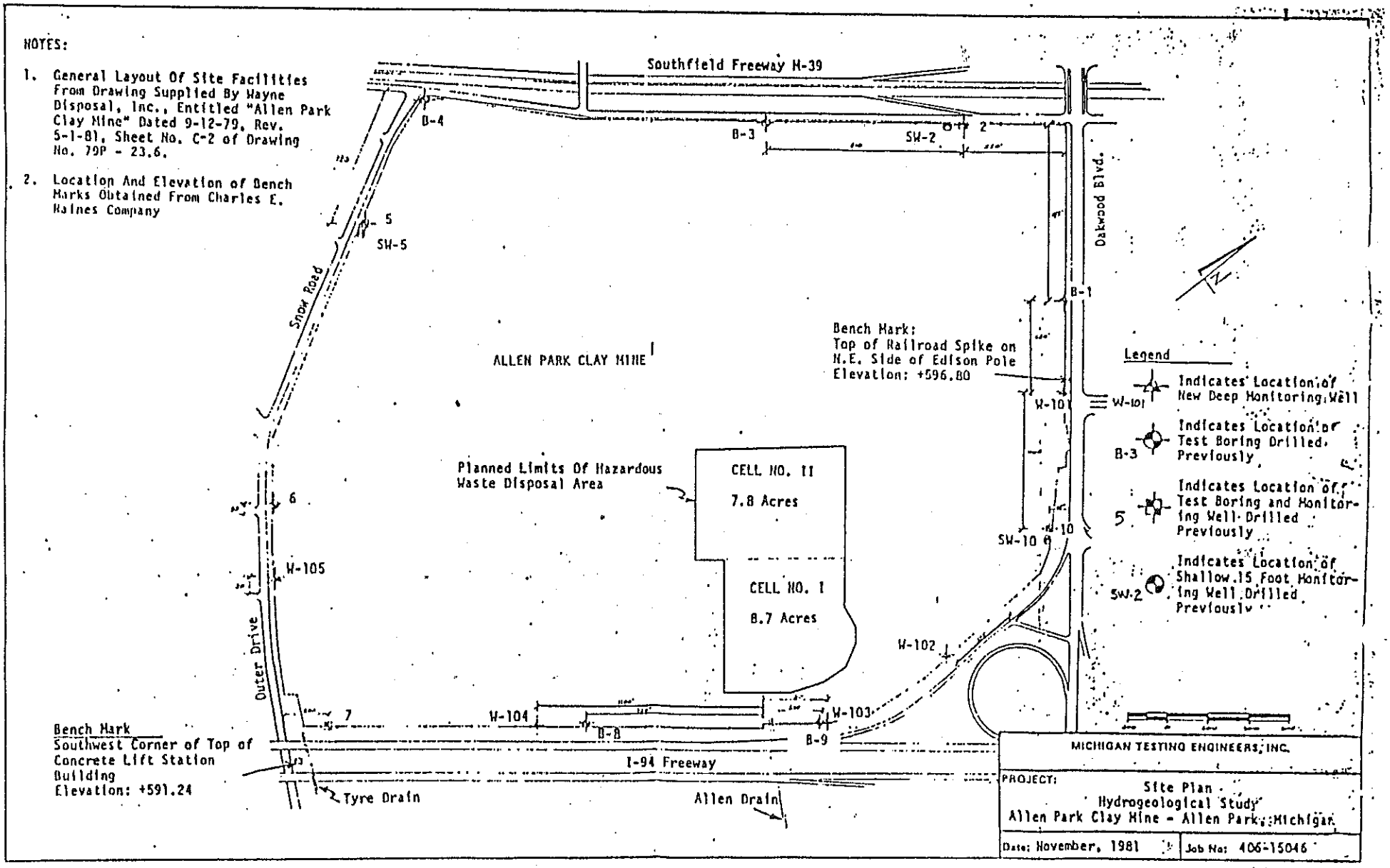


Figure 2
Site Map

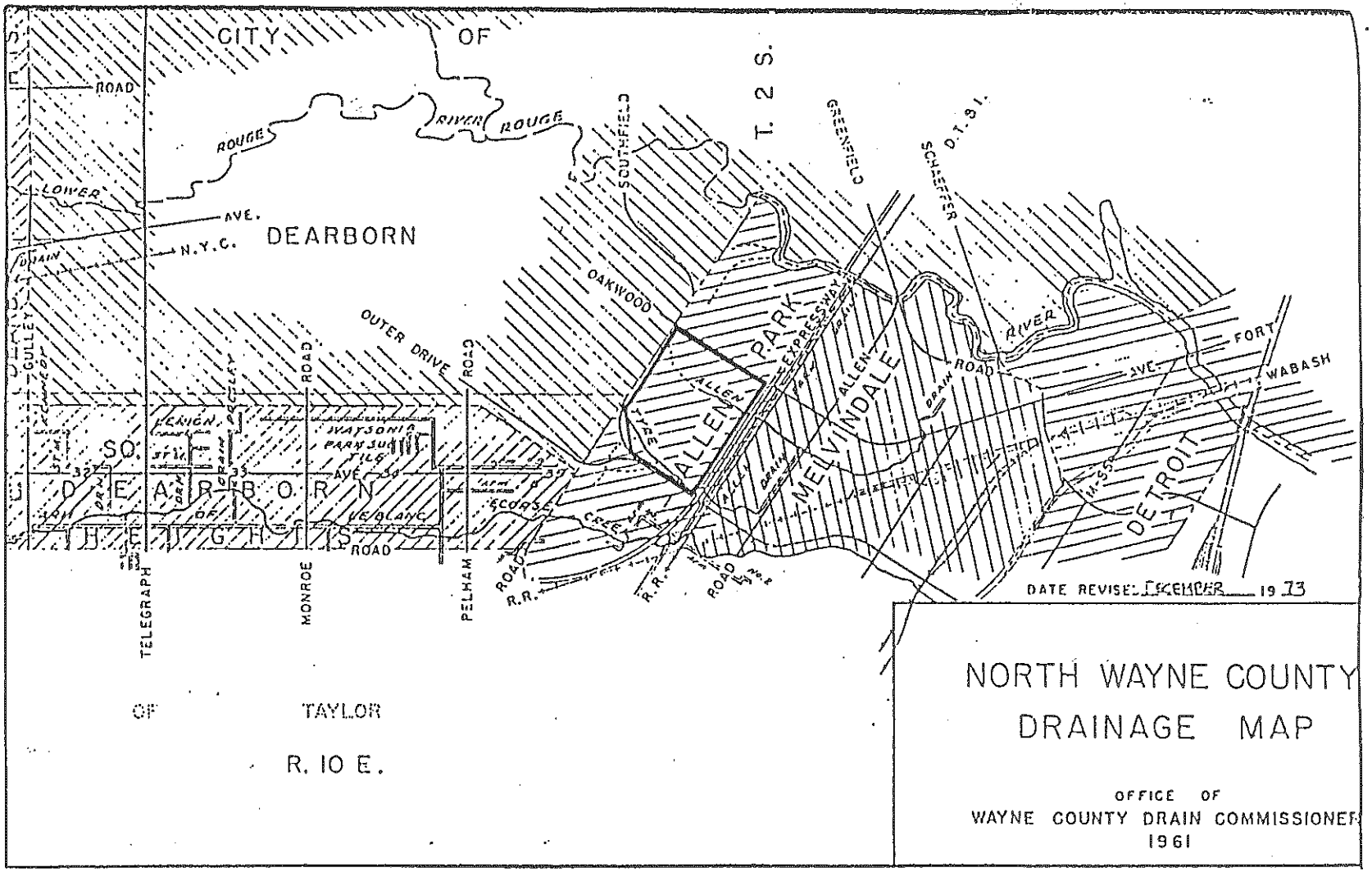
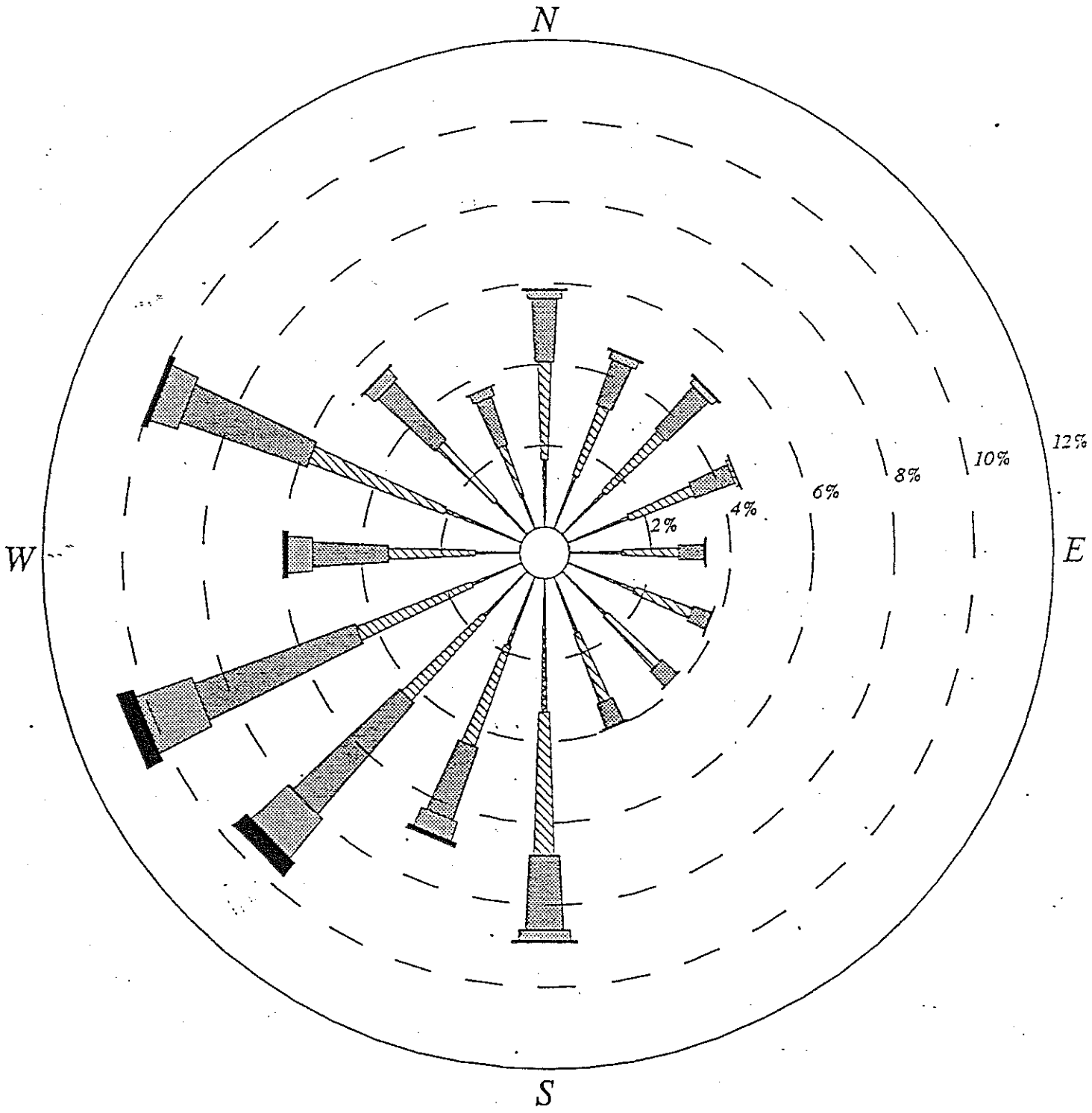


Figure 3
Storm Water Drainage Map

Allen Park, MI ('84-89)

January 1-December 31; Midnight-11 PM



CALM WINDS 3.40%

NOTE: Frequencies indicate direction from which the wind is blowing.

WIND SPEED (KNOTS)

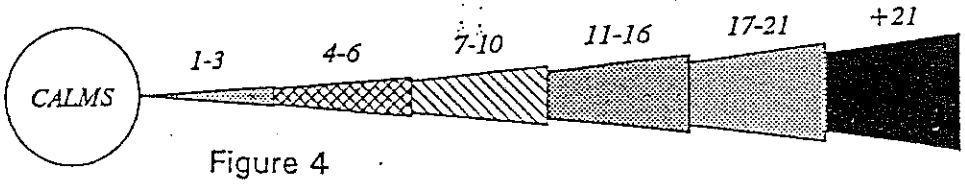


Figure 4
Wind Rose

APPENDIX B - TABLES

TABLE 1 - POPULATION DATA

	*Site	@Allen Park	#Melvindale	&Dearborn
Total persons	2,270	6,709	11,235	6,215
Total area, square miles	1.77	1.41	2.79	1.27
Persons per square mile	1,283	4,759	4,027	4,894
% Male	52.8	47.4	48.3	47.7
% Female	47.2	52.6	51.7	52.3
% White	91.0	98.0	93.6	98.7
% Black	5.8	0.0	2.9	0.1
% American Indian, Eskimo, or Aleut	0.2	0.3	1.0	0.2
% Asian or Pacific Islander	2.0	1.0	0.8	0.8
% Other races	1.1	0.7	1.7	0.2
% Hispanic origin	4.8	4.1	5.6	1.8
% Under age 10	8.6	12.4	13.0	11.3
% Age 65 and older.	20.6	20.2	14.1	21.0

Source: 1990 Census of Population and Housing, Summary Tape File 1 (Michigan). Prepared by Bureau of the Census, Washington, DC, 1991.

* Census Tract 5760
@ Census Tract 5761
# Census Tracts 5785 and 5786
& Census Tracts 5755 and 5756

TABLE 2 - HOUSING DATA

	*Site	@Allen Park	#Melvindale	&Dearborn
Households*	827	2,637	4,677	2,459
Persons per household	2.45	2.53	2.40	2.52
% Households owner-occupied	75.0	87.5	64.0	94.4
% Households renter-occupied	25.0	12.5	36.0	5.6
% Households mobile homes	0.1	0.1	1.0	0.0
Median value, owner-occupied households, $	70,300	56,800	~37,000	~75,000
Median mo. rent, renter-occupied households, $	518	742	342	~550

* A household is an occupied housing unit, but does not include group quarters such as military barracks, prisons, and college dormitories.

Source: 1990 Census of Population and Housing, Summary Tape File 1 (Michigan). Prepared by Bureau of the Census, Washington, DC, 1991.

* Census Tract 5760
@ Census Tract 5761
# Census Tracts 5785 and 5786
& Census Tracts 5755 and 5756

TABLE 3. CONTAMINANTS IN ON-SITE LEACHATE AT ALLEN PARK

CONTAMINANT	MAXIMUM CONCENTRATION (ppb)	DATE	SOURCE
Cadmium	40	8/84	2
Chromium	340	12/84	2
Lead	485	4/85	2
Zinc	40	7/84	2
Carcinogenic PAHs	NA		2
Noncarcinogenic PAHs	2704	7/84	2

NA = Not analyzed

TABLE 4. PAST CONTAMINANTS IN ON-SITE STORM WATER/TREATMENT POND AT ALLEN PARK

CONTAMINANT	MAXIMUM CONCENTRATION (ppb)(1)									COMPARISON VALUE	
	ALLEN DRAIN	DATE	SOURCE	TYRE DRAIN	DATE	SOURCE	TREATMENT POND	SOURCE	DATE	VALUE (ppb)	Source[1]
Cadmium	NA		2	NA		2	20	2	7/84	2	EMEG (child)
Chromium	30	4/84	2	<20	3/85	2	<20	2	5/85	50	Rfd (child)
Lead	<50	3/85	2	<50	3/85	2	40	2	7/84	0	MCLG
Zinc	NA		2	NA		2	NA	2		2100	LTHA
Carcinogenic PAHs	NA		2	15	7/84	9	<500	2	11/84	.006	CREG[2]
Noncarcinogenic PAHs	NA		2	69	7/84	9	<500	2	11/84	20	LTHA[3]

[1] See Appendix 3 for definitions.
[2] Used comparison value for benzo(a)pyrene
[3] Used comparison value for naphthalene

NA = Not analyzed
ND = Not detected

TABLE 5. CONTAMINANTS IN ON-SITE SEDIMENT

CONTAMINANT	MAXIMUM CONCENTRATION (mg/kg)						COMPARISON VALUE	
	TREATMENT POND	DATE	SOURCE	TYRE DRAIN	DATE	SOURCE	CONCENTRATION (mg/kg)	SOURCE [1]
Cadmium	3.6	05/89	2	1.6	8/83	2	25	EMEG
Chromium, total	9.8	12/88	2	1.0	8/83	2	200	EMEG
Lead	24.0	12/88	2	6.3	8/83	2	none	
Zinc	.27	11/84	2	NA		2	none	
Carcinogenic PAHs	.776	12/84	9	NA		2	.12	CREG [2]
Noncarcinogenic PAHs	.820	12/84	9	NA	8/83	2	Est. 2,000	RfD [3]

[1] See Appendix C for definitions.
[2] Used comparison value for benzo(a)pyrene
[3] Estimated comparison value for naphthalene

ND = Not detected
NA = Not analyzed

TABLE 6. CONTAMINANTS IN ON-SITE GROUNDWATER AT ALLEN PARK*

CONTAMINANT	MAXIMUM CONCENTRATION (ppb)[1]				COMPARISON VALUE	
	AQUIFERS				CONCENTRATION (ppb)	REFERENCES[1]
	SHALLOW	DATE	DEEP	DATE		
Cadmium	20	8/81	240	8/81	2	EMEG (child)
Chromium	50	5/81	210	4/84	50	Rfd (child)
Lead	240	12/88	1000	3/85	0	MCLG
Zinc	NA		37,000	12/80	2100	LTHA
Carcinogenic PAHs	NA		NA		.006	CREG [2]
Noncarcinogenic PAHs	20	2/89	18	11/87	20	LTHA [3]

[1] See Appendix C for definitions.
[2] Used comparison value for benzo(a)pyrene
[3] Used comparison value for naphthalene

NA = Not analyzed
ND = Not detected

* All values are from reference 2, except for zinc, which was derived from information in reference 9

TABLE 7. CONTAMINANTS IN ON-SITE AIR[1]

CONTAMINANT	MAXIMUM CONCENTRATION ($\mu g/m^3$)	DATE OF SAMPLING	COMPARISON VALUE	
			CONCENTRATION ($\mu g/m^3$)	SOURCE[2]
Cadmium	0.007	8/86	.2	EMEG
Chromium, total	<0.80	8/86	0.000083	CREG
Lead	0.242	9/86	1.5	NAAQS[3]
Particulates (total suspended)	1,089	9/86	260	NAAQS[3]
Zinc	NA		None	
Carcinogenic PAHs	NA		None	
Noncarcinogenic PAHs	NA		None	
An air monitoring station was placed at the eastern edge of the site and adjacent to Interstate 94 between August and November 1986.				

[1] All values are from reference 2 and represent air samples collected during construction
[2] See Appendix C for definitions
[3] National Ambient Air Quality Standard

NA = Not analyzed

TABLE 8. SUMMARY OF AIR RELEASES FOR ALLEN PARK, DEARBORN, DEARBORN HEIGHTS, AND MELVINDALE (lbs)

CONTAMINANT	1987	1988	1989	1990
Cadmium	0	0	0	36
Chromium	257	18,024	1	1
Lead	277	851	5	4,349
Zinc	0	250	250	5
Carcinogenic PAHs	NR	NR	NR	NR
Noncarcinogenic PAHs	0	0	0	0

NR - Not Reported

TABLE 9. EXPOSURE PATHWAYS AT ALLEN PARK CLAY MINE

PATHWAY NAME	EXPOSURE PATHWAY ELEMENTS					TIME
	CONTAMINANTS OF CONCERN	MEDIA	POINT OF EXPOSURE	ROUTE OF EXPOSURE	EXPOSED POPULATION	
POTENTIAL EXPOSURE PATHWAYS						
STORM WATER RUNOFF	Metals, PAHs	Storm water runoff	Storm water drains downgradient of site	Dermal Ingestion	Children playing in storm water drains downgradient of the site.	Past Present Future
LEACHATE	Metals, PAHs	Leachate	Direct contact	Dermal Ingestion	Children playing in storm water drains downgradient of site before 1987	Past
SEDIMENTS	Metals, PAHs	Sediments	Direct contact with drain sediment	Dermal Ingestion	Children playing in drains downgradient of the site	Past Present Future
AIR	Metals, PAHs	Ambient air	On-site workers Nearby residences	Dermal Ingestion Inhalation	Residents downwind of the site	Past Present Future
ELIMINATED EXPOSURE PATHWAYS						
GROUNDWATER	Metals, PAHs	Groundwater	Wells downgradient of the site	Dermal Inhalation Ingestion	No wells are known to exist within 3 miles of the site	Past Present Future
LEACHATE	Metals, PAHs	Leachate	Direct contact	Dermal Ingestion	Contact with leachate unlikely because leachate discharges to sanitary sewer	Present Future

APPENDIX C - COMPARISON VALUES

Comparison Values

Comparison values used in ATSDR public health assessments are contaminant concentrations in specific media used to select contaminants for further evaluation. The values provide guidelines for estimating a dose at which health effects might be observed. When more than one comparison value exists for a contaminant in a particular medium, ATSDR uses the most conservative (lowest) value. Comparison values and units of measure used in the Environmental Contamination and Other Hazards and the Public Health Implications sections of this public health assessment are described in the following paragraphs.

* CLHA = Child Longer-Term Health Advisory
* CREG = Cancer Risk Evaluation Guide
* EMEG = Environmental Media Evaluation Guide
* LTHA = Lifetime Health Advisory
* MCL = Maximum Contaminant Level
* MCLG = Maximum Contaminant Level Goal
* MRL = Minimal Risk Level (mg/kg/day)
* NAAQS = National Ambient Air Quality Standard
* RfD = Reference Dose (mg/kg/day)

* ppm = milligrams per liter (mg/L water)
  milligrams per kilogram (mg/kg soil)
* ppb = micrograms per liter (μg/L water)
  micrograms per kilogram (μg/kg soil)
* kg = kilogram
* mg = milligram
* μg = microgram
* L = liter

Child Longer-Term Health Advisories (CLHAs) are contaminant concentrations that the Environmental Protection Agency (EPA) believes will protect public health (taking into consideration the availability and economics of water treatment technology) using a child's weight and ingestion rate.

Cancer Risk Evaluation Guides (CREGs) are estimated contaminant concentrations that would be expected to cause no more than one excess cancer in a million persons exposed over a lifetime (70 years). CREGs are calculated from EPA's cancer slope factors.

Environmental Media Evaluation Guides (EMEGs) are media-specific comparison values used to select contaminants of concern at hazardous waste sites. They are calculated using ATSDR minimal risk levels (MRLs) and factor in body weight and ingestion rates.

Lifetime Health Advisories (LTHAs) are contaminant concentrations that the Environmental Protection Agency (EPA) believes will protect public health (taking into consideration the availability and economics of water treatment technology) over a lifetime (70 years) at an ingestion rate of 2 liters of water per day.

Maximum Contaminant Levels (MCLs) are contaminant concentrations that EPA believes will protect public health (considering the availability and economics of water treatment technology) over a lifetime (70 years) at an exposure rate of 2 liters per day (for an adult).

Maximum Contaminant Level Goals (MCLGs) are drinking water health goals set at levels at which no known or anticipated adverse health effect occurs and which allow an adequate margin of safety. Such levels consider the possible impact of synergistic effects, long-term and multi-stage exposures, and the existence of susceptible groups in the population. When there is no safe threshold for a contaminant, the MCLG should be set at zero.

A Minimal Risk Level (MRL) is an estimate of daily human exposure to a chemical (in mg/kg/day) that is likely to be without an appreciable risk of deleterious effects (noncancer) over a specified duration of exposure. MRLs are calculated using data from human and animal studies, and are reported for acute ($\leq$ 14 days), intermediate (15-364 days), and chronic ($\geq$ 365 days) exposures. MRLs for specific chemicals are published in ATSDR Toxicological Profiles.

The National Ambient Air Quality Standards (NAAQS) are established under Section 109 of the Clean Air Act; they apply to any pollutants that, if present in air, might endanger public health. The standards are not enforceable; rather, they establish ceilings that are not to be exceeded in the area in which the contaminant source is located.

EPA's Reference Dose (RfD) is an estimate of the daily exposure to a contaminant that is unlikely to cause adverse (noncancer) health effects.

Comparison Value References

1. Agency for Toxic Substances and Disease Registry. Health Assessment Guidance Manual. Atlanta: ATSDR, March 1992.

APPENDIX D - SUMMARY OF SURVEYS CONDUCTED BY THE COMMUNITY

SUMMARY OF SURVEYS CONDUCTED BY THE COMMUNITY

Table 12. Self Reported Study for Snow Woods (Ash and Venice Streets)

Cancer Type	Number of Cases	Number of Deaths
Lung	5	5
Brain	2	2
Lung and Brain	1	1
Throat	1	1
Unspecified	11	8
Adverse Reproductive Outcome	**Number of Cases**	**Number of Deaths**
Stillbirth (late fetal death)	1	1
Congenital Heart Defect	1	1
Miscarriages	2	2
Genitourinary Disorders	4	0

Residents of the community near APCM have conducted surveys to collect information on the numbers and types of adverse health effects reported by local residents. One citizen conducted a survey (in 1990) of self-reported cancer and reproductive outcomes among citizens residing near Ash and Venice streets in the Snow Woods area of Dearborn. Twenty local residents of unknown age and race were surveyed; they reported information about cancer occurrence and death from cancer and about selected adverse reproductive outcomes (Table 12).

A second health survey, of the Snow Woods neighborhood of Dearborn, Michigan, was conducted (in 1989) by two local residents. The residents used a neighborhood cancer survey form provided by the Wayne County Health Department, Environmental Protection Bureau, to conduct the survey. The survey form included information on address, years of residence in the neighborhood, occupation, smoking status, sex, cancer diagnosis, and other health complaints. Respondents lived north and south of Snow Woods Road, within the boundaries of the U.S. Postal Service ZIP Code area numbered 48124. Residences included in the survey were approximately one-third of the total number of residences in the

Snow Woods neighborhood of Dearborn.

A summary of reported cancer occurrence in women and men is provided in Tables 13 and 14. As shown in those tables, the most frequently reported cancers in women were cancers of the breast, colon, and uterine cervix (cervical cancer), particularly in women aged 46 to 65 years. The most frequently reported cancers in men were lung, brain, and colon cancers, particularly in men aged 46 to 65 years. Leukemia was reported in males younger than 15 years.

The survey included information on smoking status at the time of the survey; however, information was not collected on smoking history (past smoking), the duration (how long) and frequency (how often), and the type (e.g., cigarette, cigar). Because smoking may cause or contribute to development of many types of cancer, that information is important in determining whether smoking may have contributed to the reported occurrences of cancer in community residents.

Information on smoking status collected during the survey indicated that approximately 18 of the 35 women (51%) who reported having cancer considered themselves to be smokers or to have been smokers within the 10-year period before their cancers were diagnosed. Among the 10 women who reported breast cancer, 4 (40%) were smokers; among the three women with lung cancer, 1 (33%) was a smoker. Approximately 13 of the 32 men (41%) who reported having cancer were reported to be smokers. Among the 10 men who reported having lung cancer, 6 (60%) were smokers. Available information suggests that smoking may have contributed to the occurrence of breast cancer in women and of lung cancer in men.

Occupational information collected during the survey was reviewed to determine whether people who reported having cancer had similar occupations. Occupational exposures to contaminants and other agents have been shown to cause or contribute to the occurrence of various types of cancer. Available information does not reveal any similar trends in occupation for persons who reported having cancer. The data indicate that the majority of women who responded to the survey were homemakers, clerks or office personnel, nurses, and maids. The majority of men who responded were engineers, foremen, or supervisors for General Motors Corporation; teachers or professors; and craftsmen (wood workers, machinists).

Information on the age and number of years in residence in the neighborhood indicates that the majority of respondents were more than 45 years old and had lived in the area 20 to 30 years. That information suggests that the Snow Woods area of Dearborn is a stable (rather than transient) community.

Medical information confirming the reported adverse health outcomes (cancer and adverse reproductive outcomes) was not collected for either of the two

self-reported surveys. Likewise, information was not available on the completeness and accuracy of information for the reported types of cancer, date of cancer diagnosis, years of residence in the area, smoking status, and occupation. For the first survey, information was not available about the selection of households for the survey, and the age, sex, race, occupation, and smoking status of the respondents.

Table 13. Summary of Citizens' Self-Reported Health Survey (1989)

Cancer in Men

Cancer Type	Age at Diagnosis (in years)*								
	<15	15-25	26-35	36-45	46-55	56-65	66-75	>75	Total
Skin					1	1			2
Colon					2	2			4
Lung					2	4	3	1	10
Leukemia	3				1				4
Brain	1				2	1	1		5
Lymphoma					1	1			2
Kidney							1		1
Larynx							1		1
Pancreas					1		1		2
Liver					1				1
Prostate						1	2		3
Total	4	0	0	0	11	11	8	1	35[b]

* Medical information confirming cancer diagnoses was not collected as part of the survey.

[a] The reported age at diagnosis (of each man) was used.

[b] Three men reported two types of cancer; both were included in this table. A total of 32 men reported having cancer.

Table 14. Summary of Citizens' Self-Reported Health Survey (1989)

Cancer in Women

Cancer Type	Age at Diagnosis (in years)[a]								
	<15	15-25	26-35	36-45	46-55	56-65	66-75	>75	Total
Skin				1		1			2
Colon					1	3	1	1	6
Breast				3	2	1	3		9
Thyroid				1					1
Lung					2	1			3
Ovary					2		1		3
Leukemia		1							1
Bone					1				1
Uterine (Cervix)			1		1	3			5
Gallbladder					1				1
Brain					1	1			2
Lymphoma				1	1				2
Stomach						1		1	2
Total		1	1	6	12	11	5	2	38[b]

[a] The reported age at diagnosis (of each woman) was used.

[b] Three women reported two types of cancer; both were included in this table. A total of 35 women reported having cancer.

Medical information confirming cancer diagnoses was not collected.

APPENDIX E - ADDITIONAL HEALTH INFORMATION

Additional Health Information

Brain Cancer

Cancers of the brain are characterized as primary or secondary lesions. Primary brain cancers originate within the central nervous system (CNS) and do not usually metastasize (spread) beyond the CNS pathways. Secondary brain cancers originate at distant place in the body and metastasize to the central nervous system. The focus of this public health assessment is on primary brain cancers. The available health outcome (cancer incidence) data pertinent to the site pertain only to primary brain cancers and not to secondary or metastatic brain cancers that originate at biologic sites distant from the brain. Information on the biologic site of origin for metastasized brain cancers is not available for cancer cases at this site; that type of information would be needed to evaluate causes of, or factors contributing to, the occurrence of those types of cancers.

Primary brain cancers occur at varying rates depending on age, sex, and race. The most common type of brain cancer, accounting for more than half of all adult brain cancers, is glioma, a fast-growing cancer in the upper part of the brain. In adults, brain cancers occur most often between the ages of 55 and 79 (16).

A recent report (17) using data from the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program documented that national age-specific incidence rates for primary malignant brain tumors (in men and women) increased dramatically between the years 1973-74 and 1985.

The report attributed this observed increase in cancer incidence in older persons to use of improved x-ray techniques for tumor diagnoses since 1973, or to other single or combined genetic, viral, chemical, radiologic, or developmental factors.

Except for meningiomas, a benign tumor of the membranes that surround the brain and spinal cord, men have a higher incidence than women of all types of benign and malignant nervous system tumors. In the United States, brain cancers occur more often in whites than in African-Americans (16).

Brain cancer is the second most common type of cancer in children and occurs most often in children under 10 years. Children have a higher incidence of medulloblastoma, a cancer that affects the part of the brain connected to the spinal cord. It accounts for almost a quarter of all childhood brain cancers, but fewer than 2% of adult brain cancers.

Few studies indicate causative factors for brain tumors, although toxicologic, epidemiologic and medical data suggest a relationship with occupational,

environmental, viral, and genetic factors (16).

Numerous retrospective studies have been conducted to determine possible occupational factors that cause or contribute to the occurrence of primary brain cancers. Collectively, those studies suggest that certain brain cancers are more frequent among workers in specific occupational settings. Specific information on types and duration and frequency of chemical exposures is not available for the majority of those occupational studies.

Among occupations involving potential exposure to chemical carcinogens, it has been suggested that there have been excess brain cancers in workers in rubber-manufacturing plants who are exposed to vinyl chloride (16,18-20); polyvinyl chloride production workers (18,20); farmers, including cattle and sheep ranchers, dairy farmers, and grain millers (16,18,21,22); chemists (16), pharmaceutical workers (16,18); embalmers (16); electricians and persons potentially exposed to electric and magnetic fields (19,20); dentists (20); workers in production of petroleum and petrochemicals (16,18,20); aircraft workers (20); and workers who may be exposed to metal dusts or fumes (19).

Excess mortality from primary brain cancer was reported in retrospective (case-control) studies involving oil refinery workers (23,24) and chemists (25).

Analysis of data from the Swedish Cancer Registry (26) indicates that standardized incidence ratios (rates of occurrence among workers in an industry as compared with rates for similar persons not in the industry) for gliomas were increased among male dentists; agricultural research workers; public prosecutors; female physicians and other health care employees; welders; metal cutters; glass, porcelain, and ceramics workers; and women employed in wool mills.

Long-term exposure of farm workers and of children raised on farms to pesticides has been associated with development of brain cancer. Those studies link childhood brain cancer with exposure to sick pets and farm animals, suggesting a possible viral etiology (16).

There is some clinical evidence that lead exposure may be linked to a type of glioma in children (16). Those findings were supported by studies in which rats fed diets high in lead developed gliomas. A few studies have shown a possible genetic susceptibility to brain cancers. Certain gliomas have been shown to occur more often in families than among people who are not related. There has been shown to be a significant association between brain cancer in children and the presence of epilepsy in their siblings (16).

Other factors that may be related to the development of primary brain cancer (in particular, meningiomas and gliomas), include high-dose X-rays; consumption of sodium nitrate, a commonly used meat preservative; head trauma (19); use of

barbiturates by children and pregnant women (16); and elevated serum cholesterol (27), which may be a marker for elevated socioeconomic status.

Lung Cancer

Lung cancer is the major cause of death in most Western countries, particularly among men. In the United States, lung cancer is the leading cause of death among men and women, and accounted for approximately 15% of all cancer cases (22% in men, 8% in women) reported in 1980, and for approximately 23% of all cancer deaths (28). Lung cancer has been increasing in most areas of the United States (from 1950 to 1980); the rates have increased most for nonwhite persons and for women aged 20 to 30. An inverse association between lung cancer and socioeconomic status has been observed in several studies (28); that is, the rates of lung cancer are highest in people of lower socioeconomic status. Increased smoking habits among people of lower socioeconomic status may account for that observed difference.

Cigarette smoking is the major cause of lung cancer and is estimated to cause 85% of lung cancer deaths. Tobacco smoke has been shown to interact with some occupational carcinogens, such as asbestos and radon. The risk of developing lung cancer is related to the type of tobacco product smoked and to the duration and frequency of smoking (28).

Occupational exposure to airborne asbestos appears to have a great effect on the risk of developing lung cancer and mesothelioma (a cancer of the lining of the chest cavity, or mesothelium). Epidemiologic studies have indicated that the risk of developing those adverse health conditions is substantially higher for workers in asbestos industries, including miners and millers, and textile, insulation, and shipyard and cement workers. An increased rate of lung cancer has been documented in uranium miners and hard rock miners; it is believed to be related to inhalation of radon daughters. Lung cancer is also one of the major effects of exposure to high doses of ionizing radiation (28).

A number of occupational agents have been shown to contribute to the incidence of lung cancer, including chloromethyl ethers, hexavalent chromium, chromate, cadmium, nickel, inorganic arsenic, formaldehyde, and terpenes (used in wood treating) (29). Several types of occupations have been found to be related to an excess occurrence of lung cancer, even after accounting for the effects of smoking; they include shipyard workers, truck drivers, rubber workers, printers, leather workers, construction workers, and cooks (29).

Lung cancer tends to be more common in urban than rural areas; that difference persists even after controlling for smoking habits (28). Urban air pollution has been suspected as a cause of lung cancer, but it has been difficult to establish a definitive link.

Genitourinary Disorders (Positive Pap Smears)

The Papanicolaou (Pap) smear is indicative of cytologic (cell-related) and histologic (tissue-related) events occurring in the development of cervical cancer. The Pap smear is a method of screening cells for cervical intraepithelial neoplasia (CIN) and early invasive carcinoma of the cervix, the precursors of cervical cancer.

Most CIN is described as a process occurring in three stages. The third stage, the higher grade lesions, is regarded as more ominous than the two earlier stages; however, the immediate risk of developing invasive cervical cancer at any one stage cannot be predicted. Cell abnormalities are found in approximately 1% of all Pap smears and in approximately 2.5% of the smears of women younger than age 30. The usual development of CIN, from the first to third stage, occurs over a number of years (16,30).

Cervical cancer is considered a sexually transmitted disease that is seen most often in women who have the characteristics of people at high risk for other sexually transmitted diseases: early age at first intercourse, early pregnancy, low socioeconomic status, a history of any sexually transmitted disease, and, most importantly, a history of multiple male sexual partners. The only factor that has been shown epidemiologically to be independently related to the occurrence of cervical cancer is the number of male sexual partners. That relationship takes into account not only the number of male sexual partners that a woman has had, but also the number of sexual partners that her male partner(s) has (have) had (16).

Information available in the medical and epidemiologic literature does not indicate that environmental chemical factors play an important role in the development of cervical cancer, although the lack of such data does not necessarily rule out environmental chemicals as possible causative agents (16,30).

Polycyclic Aromatic Hydrocarbons (PAHs)

A discussion of PAHs is warranted because the presence of cancer- causing substances is an important health concern of the community near the APCM site. It is important to emphasize that the levels of PAHs found at the APCM site are not of public health concern. PAHs found on site are at relatively low levels, and the estimated exposures of on-site workers and nearby residents are negligible. Furthermore, there is no reason to believe that PAHs are migrating off site (in significant or detectable concentrations).

Occupational exposure to elevated concentrations of PAHs has been linked to cancer in coke oven workers (lung cancer and upper respiratory tract tumors) and other related occupations (gas generation, shale oil production) (14). In addition, chimney sweeps historically have had an elevated risk of scrotal cancer, resulting from prolonged skin contact with soot.

PAHs are formed as products of ordinary combustion and thus are widespread in the environment. PAHs bioaccumulate and bioconcentrate in the food chain, but are fairly rapidly excreted. They are found in smoke, cooking oils, smoked meats, charcoal-broiled foods, coal, soot, grains, and cereals. PAHs generally have low water solubility and strong absorption to soil (14).

The main public health concern about PAHs is their potential to cause cancer. However, not all PAHs have been found to cause cancer. Noncarcinogenic PAHs include acenaphthene, acenaphthylene, anthracene, fluoranthene, fluorene, methylated naphthalenes, naphthalene, phenanthrene, and pyrene. Sufficient evidence exists to accept that the following PAHs are carcinogenic: benz(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene by the oral route; benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, 5-methylchrysene, dibenzo(a,e)anthracene, dibenzo(a,h)anthracene, dibenzo(a,i)anthracene, and indeno[1,2,3-cd]pyrene by the dermal route (14).

The most representative carcinogenic PAH is benzo(a)pyrene (which was found in sediment on site at APCM). In animal studies, PAHs often exhibit their toxic effects locally, at the site of administration. For example, in rodents studies, when benzo(a)pyrene was painted on the skin, it caused skin papillomas; when administered by inhalation, it induced lung tumors. On the other hand, when administered to mice, it increased the incidence of forestomach tumors and lung adenomas (14).

Respiratory Tract Problems (Asthma)

Asthma is a fairly common adverse health condition that may have serious consequences; individuals with asthma have a 1 to 3% mortality rate. Despite available data on the occurrence of asthma, there are no universally accepted criteria to characterize its severity.

The classic definition of asthma was introduced in 1962 by the Committee on Diagnostic Standards for Nontuberculosis Respiratory Diseases (31). The fundamental characteristic of asthma is obstruction of small and large airways, which results in a reduction of airflow throughout the lungs. Airway obstruction increases the work of breathing and may result in respiratory muscle fatigue, wheezing, coughing, and tightness in the chest.

Factors that may elicit an asthmatic response in susceptible individuals include genetic and hormonal factors; occupational and environmental irritants, such as sulfur dioxide, nitrogen dioxide, formaldehyde, cyanide compounds, flour, wood dust, and fumes and smoke (32,33); viral respiratory tract infections (34); and exercise and exposure to cold air (35).

Exposure to high levels of air pollutants, including sulfur dioxide, nitrogen dioxide, and particulate matter in ambient air outside of the work environment has been shown to cause acute and chronic adverse effects to the respiratory tract (36). One study conducted in Helsinki, Finland (36), reported positive, statistically significant associations between ambient levels of sulfur dioxide and both numbers of upper respiratory tract infections diagnosed at local health centers, and absenteeism from day-care centers and work places. The main sources of air pollutants in this study were coal- and oil-fired power plants, road traffic, and general industrialization. The weekly mean (average) of sulfur dioxide concentrations ranged from 9 to 62 $\mu g/m^{3;}$ the mean daily maximum was 53.0 $\mu g/m^3$.

Laboratory models of silica, coal, and asbestos toxicity (37) have led to the prediction that pulmonary fibrosis (lung cancer) is one of the ultimate consequences of human exposure and accumulation of respirable particulate and dusts (e.g., less than or equal to 5 micrometers in the alveolar region of the respiratory tract. Because the studies involve laboratory models rather than human systems, their results may not be appropriate for use in predicting the likelihood of development of cancer in people.

performed 5 to 10 years ago. In the early to mid-1980's, laboratories typically analyzed water samples for total metals. Silty samples that are preserved without field filtration and are subsequently analyzed in the laboratory for total metals typically yield higher values for metals. When this occurs, the value obtained from the laboratory may not be indicative of groundwater contamination. The conclusions about the metals data needs to distinguish whether this is totals (TOT) or disolved (DISS) and not "combined."

3. ATSDR may want to consider moving the last paragraph on Page 16, Section C., "Eliminated Exposure Pathways," Groundwater, to the groundwater section on Page 11. The groundwater section entitled "On-Site Contamination" does not discuss the possibility/likelihood that sources other than the facility are responsible for the elevated constituents present in the groundwater. When discussing maximum concentration values for constituents present in the groundwater (Page 11, Groundwater), this section needs to address whether the sampling locations are upgradient or downgradient from the facility, and for the deep aquifer, the hydrogeologic factors that would limit the potential downward migration of contaminants. To help in this regard, Table 6 should identify the well location where each of the maximum concentration values were detected.

4. The summary at the beginning of the assessment states that "Metals have also been found in the on-site air." We recommend that this statement include that the concentrations were below the levels of public health concern.

5. For ease of reference, ATSDR should consider including an appendix in the back of the assessment containing copies of the analytical data. When comparing the maximum concentration values discussed in the assessment with the analytical data contained in WMD files, it appears that some of the information may be missing. For instance, Table 6 states that the maximum concentration for lead detected in the groundwater was 1000 ppb and that this value was detected during a March, 1985 sampling. When reviewing the data in WMD files from the March, 1985 sampling, the highest concentration noted for lead was 100 ppb. By providing copies of the analytical data in an appendix of the assessment, the reader will be able to quickly reference the information that ATSDR used to make their conclusions, in case questions arise about the data.

If you have any questions regarding these comments on the draft health assessment, please contact me.

Sincerely,

Peter Quackenbush
Senior Environmental Engineer
Waste Management Division
517-373-7397

cc: Mayor Gerald Richards, City of Allen Park
Mayor Thomas Coogan, City of Melvindale
Mayor Michael Guido, City of Dearborn
Mr. Richard Traub, U.S. EPA
Ms. Lorraine Kosik, U.S. EPA
Dr. Harold Humphrey, MDPH
Mr. Glen Brown, Wayne County Health Dept.
Mr. Ken Burda, DNR
Mr. Steve Buda, DNR
Ms. De Montgomery, DNR
HWP/C&E File

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

DEC 7 1992

Waste Management Division
United States Environmental
Protection Agency
77 W. Jackson Blvd. (H-7J)
Chicago, Illinois 60604

Dear Sirs:

We are submitting the following draft Preliminary Health Assessment for your review:

Allen Park Clay Mine

Please review this document for any major technical or factual errors or omissions. Should you have any comments, please submit them to us, in writing, for review and transmittal to the appropriate state health department representative.

Please return the review comments back to ATSDR within 30 days. Should you have problems meeting this schedule, please let us know that there will be a delay.

If you have any concerns, please feel free to call us at 886-0840. We look forward to making this Preliminary Health Assessment a helpful and useful document.

Sincerely,

L. Fabinski

Louise Fabinski
Senior Regional Representative

cc: Max Howie DHAC/RIMB

ATSDR to PL HRP-8J

711-2

LP file

11-20-92 Initial Release Memo

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

JAN - 9 1990

Mr. Robert A. Knoop
Council President
City of Dearborn
City Hall
13615 Michigan Avenue
Dearborn, Michigan 48126

Dear Mr. Knoop:

The Agency for Toxic Substances and Disease Registry (ATSDR) has evaluated the concerns that you expressed in your letter regarding the Allen Park Clay Mine Site. Our evaluation involved a visit to the site by ATSDR Regional and Headquarters staff persons and interviews with officials from local, State, and Federal health and environmental agencies. The ATSDR has determined that there is sufficient basis to justify conducting a health assessment in response to your request and will begin preparing the health assessment immediately.

We expect to have a Final Draft Health Assessment prepared by April of 1990. Copies of the document will be provided to you and the public for comment. All comments will be considered and the document will be revised as required to prepare the Final Health Assessment.

Should you have any questions concerning our evaluation of the Allen Park Clay Mine site, please contact either of the ATSDR Region V Representatives, Louise Fabinski or Denise Jordan-Izaguirre, at 312/353-8228 or our Petitioned Health Assessment Coordinator, Dr. Mike Allred, at 404/639-0610.

Sincerely yours,

Barry L. Johnson

Barry L. Johnson, Ph.D.
Assistant Administrator

11-7

cc:
Carl Levin, U.S. Senate
John D. Dingell, House of Representatives
David Miller, Ford Motor Co.
John Hesse, Mich/DPH
Allen Howard, Mich/DNR
Robert Ratz, Wayne County/DPH
Tom Geishecker, U.S.EPA, Region V
David Petrovski, U.S.EPA, Region V

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

JAN 9 1990

The Honorable Thomas J. Coogan
City of Melvindale
3100 Oakwood Boulevard
Melvindale, Michigan 48122

Dear Mr. Coogan:

The Agency for Toxic Substances and Disease Registry (ATSDR) has evaluated the concerns that you expressed in your letter regarding the Allen Park Clay Mine Site. Our evaluation involved a visit to the site by ATSDR Regional and Headquarters staff persons and interviews with officials from local, State, and Federal health and environmental agencies. The ATSDR has determined that there is sufficient basis to justify conducting a health assessment in response to your request and will begin preparing the health assessment immediately.

We expect to have a Final Draft Health Assessment prepared by April of 1990. Copies of the document will be provided to you and the public for comment. All comments will be considered and the document will be revised as required to prepare the Final Health Assessment.

Should you have any questions concerning our evaluation of the Allen Park Clay Mine site, please contact either of the ATSDR Region V Representatives, Louise Fabinski or Denise Jordan-Izaguirre, at 312/353-8228 or our Petitioned Health Assessment Coordinator, Dr. Mike Allred, at 404/639-0610.

Sincerely yours,

Barry L. Johnson

Barry L. Johnson, Ph.D.
Assistant Administrator

711-8

cc:
Carl Levin, U.S. Senate
John D. Dingell, House of Representatives
David Miller, Ford Motor Co.
John Hesse, Mich/DPH
Allen Howard, Mich/DNR
Robert Ratz, Wayne County/DPH
Tom Geishecker, U.S.EPA, Region V
David Petrovski, U.S.EPA, Region V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: MAY 4 1990

SUBJECT: Review of Allen Park Draft Health Assessment

FROM: Karl E. Bremer, Chief
RCRA Permitting Branch

TO: Denise Jordan-Izaguirre
ATSDR Regional Representative

As requested, the Draft Health Assessment for the Ford Allen Park Facility has been reviewed by my staff. The comments of the RCRA Program are provided below:

- Summary, Paragraph 1: The Federal HSWA Permit was jointly issued with the State Act 64 license on May 8, 1989. In contrast to the Act 64 license, the HSWA Permit did not become effective until June 8, 1989. In addition, due to delays the construction of Cell II will probably be completed no sooner than 1991.

- Page 2, Paragraph 2: The facility operated under interim status until the effective dates of the Act 64 license and the HSWA permits.

- Page 2, Paragraph 5: Cell II is the hazardous waste cell which was approved on May 8, 1989, and therefore the unit could not be "redesigned" in 1986 as it did not exist. The disposal/placement of solid waste/fill referenced was conducted as part of the closure of the Cell I hazardous waste landfill.

If you have any questions regarding this matter, please contact Mr. David Petrovski of my staff, at 886-0997.

cc: H. Croke
R. Traub

5/14/90

RCRA PERMITS	TVR.	PETR.	IL. CHIEF	IN. CHIEF	MI. CHIEF	MN/WI CHIEF	OH. CHIEF	RMSB CHIEF	O.R. ADMIN.	
5-4 INIT. DATE		5-4-90								

111-9

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

April 18, 1990

Karl E. Bremer, Chief
RCRA Permitting Branch
U.S.E.P.A. - Region 5
230 South Dearborn
Chicago, Illinois 60604

Dear Mr. Bremer:

Enclosed is a Draft Health Assessment for the Allen Park Clay Mine/Ford Motor Company site. Please review the document to determine if it accurately characterizes the site and whether more recent or complete data are available.

Your written comments will be included in the administrative record for this site. Comments from your reviewer should be approved or at least acknowledged by EPA management. Please provide these comments to me within 30 days of receipt. Should you have problems meeting this schedule, please advise me immediately. Your comments will be forwarded to ATSDR, Division of Health Assessment and Consultation.

If you have any questions or concerns, please call me at (312) 353-8228 or 353-6576.

Sincerely yours,

Denise Jordan-Izaguirre
Regional Representative
ATSDR - Region 5

Report
dated 5-1790
In file

4/11/90

Health Assessment for

ALLEN PARK CLAY MINE/ FORD MOTOR CO.

ALLEN PARK (WAYNE COUNTY), MICHIGAN

CERCLIS NO. 980568711

Agency for Toxic Substances and Disease Registry
U.S. Public Health Service

Comments Period Ends:

5/17/90

11-10

Historically, the APCM site has been used for the mining of clay. Large trench cuts were formed by the excavation of clay. Since 1956, these trenches have been used for the backfilling of wastes generated by the nearby Ford Rouge Plant. These wastes included construction debris, wastewater treatment sludge, foundry mold cores, and wastes generated during the manufacturing of steel and glass (see Exhibit I).

Solid waste disposal activities initiated in 1956 were conducted under a permit issued by Encorse Township. Since that time waste disposal activities at APCM site have been regulated under Michigan Public Act 87 (1965) as amended by Act 89 (1971) and then by Act 641 (1979). Hazardous waste disposal activities are regulated under Michigan Public Act 64 and RCRA interim status. Although the RCRA Part B application has recently been approved for the facility, the site is not currently accepting wastes. Construction of the new hazardous waste cell is not expected to be completed until 1991.

Prior to 1982, leachate from the landfill would seep into nearby surface waters; however, in 1980, construction on a number of site improvement projects was initiated to prevent this. Specific projects included the installation of a system of french drains and a surface water drainage system around the site's perimeter, a perimeter dike system, an interior dike system, and the installation of monitoring wells. These site improvement projects, used to control leachate migrations, site run-on, and site run-off, were completed by 1982 (2).

In February 1984, the APCM site was removed from Michigan's Act 307 Priority List. The removal of the site from the list indicates that the Michigan Department of Natural Resources no longer considers the site to be a location at which significant contamination is occurring or threatened (2).

In 1986, Cell I, a portion of the landfill which had accepted hazardous wastes from 1982 to 1986, was closed. Cell I consisted of an 8-acre trench which extended to a depth of 35 feet below grade. Closure of this cell included the installation of a leachate collection system, capping of the cell with a synthetic liner and clay, installation of a drainage layer in the cap, grading the Cell I portion of the site, and planting a vegetative cover over the capped area (1). In 1986, Cell II, also an 8-acre 35-foot deep trench, was redesigned. Cell II redesign work included disposal of about 49,000 cubic yards of nonhazardous wastes in the cell's south corner to provide appropriate slopes to support a cell liner (2).

In 1987, site improvements were installed in the old landfill unit, including a leachate collection system which discharges into the sanitary sewer (2).

B. Site Visit

Agency for Toxic Substances and Disease Registry (ATSDR) staff members conducted a site visit on May 25, 1989. During the site visit, observations were made of conditions on-site and off-site, including land uses in areas on-site and adjacent to the site, the ease of site access, the proximity of residential areas to the site, the presence of on-site physical hazards, and the general physical characteristics of on-site and off-site areas.

Access to the site is restricted by an 8-foot high chain link fence which surrounds the site. Access to the site is also somewhat restricted by the six to eight lane freeways which surround the site on the western, southern, and eastern sides. The northern side of the site is bordered by a three lane roadway. Security at the site is also maintained by security officers who patrol the site on a 24-hour basis.

Inactive portions of the site, the closed and capped hazardous waste portion in particular, are covered with vegetative growth consisting primarily of grasses. Non-vegetated portions of the site have ongoing soil excavating and other construction activities. Other observations made during the site visit will be discussed in appropriate sections of this Health Assessment.

C. Community Health Concerns

Residents living within the vicinity of the APCM site have expressed concern about the types of materials to be deposited into the site. They are also concerned that the site may be related to an alleged increased cancer incidence. These citizens have relayed these concerns to ATSDR in the form of two petitions. The first of these was submitted on December 21, 1988 by Thomas J. Coogan, Mayor of Melvindale. The second petition was submitted on January 5, 1989 by the City Council of Dearborn, Michigan.

Disposal activities conducted at the APCM site are regulated by the Michigan Department of Natural Resources and the U.S. Environmental Protection Agency (EPA) under the legislative guidelines provided by the RCRA Solid and Hazardous Waste amendments of 1984. Although it has no legislative authority to regulate the disposal of wastes, ATSDR can assess the public health impacts of waste disposal activities. In response to citizen concerns, this Health Assessment will assess the public health impact of the APCM site.

An ad hoc committee regarding health and safety hazards of the Allen Park Clay Mine Landfill stated in a February 2, 1983 report that the Dearborn Department of Health and the Air Pollution Division of the Wayne County Health Department had no history of complaints from Dearborn residents pertaining to the APCM site. The ad hoc committee included faculty of the University of Michigan and Wayne State University, and staff from the

Dearborn Department of Health.

Other complaints related to the APCM site dealt specifically with allegations that clay from the site adhered to the tires of trucks leaving the site and was being scattered along Oakwood Boulevard. In response to these concerns, Ford Motor Company installed an on-site tire wash facility which has been successful at addressing these concerns.

DEMOGRAPHICS, LAND USE, AND RESOURCE USE

The APCM Site is located in Wayne County, Michigan, about 2 miles south of Detroit. The site is bordered on the east by the City of Melvindale, on the south by Allen Park, and on the west by Dearborn Heights. The northern part of the site borders an industrial area in which the Ford Rouge Plant is located. The site lies in a highly populated urban area but is separated from residential areas by a greenbelt surrounding the site and freeways located on all but the northern side of the site.

Residential areas within 1 mile of the site consist primarily of single family homes with scattered apartment complexes. An estimated 125,000 people live within a 4-mile radius of the site, including residents of Dearborn Heights, Allen Park, Melvindale, and Dearborn. The nearest residences are located in the northeastern sections of Dearborn Heights in the Snow Woods neighborhood (2).

Other land uses within the vicinity of the site include institutional land uses including the Veterans Administration Hospital located immediately southwest of the site. There are a number of elementary and secondary schools located within 1 mile of the site.

Outside of home gardens, there are no agricultural land uses within 1 mile of the site. Recreational land uses in the site vicinity include the River Rouge Park, located about 1/2 mile to the north.

Numerous industrial land uses are located within the site vicinity including the Ford Rouge Plant, located about 1/4 mile north of the site. Other nearby (within 1 mile) industrial areas are located northwest, south and east of the site. An especially large industrial area (over 500 acres) is located 1.25 miles northeast of the site.

ENVIRONMENTAL CONTAMINATION AND OTHER HAZARDS

Environmental monitoring at the APCM site has been conducted by a number of local, state, and federal agencies. This Health Assessment is based on environmental monitoring results collected since 1981. Environmental monitoring results collected prior to this period were not available and are less likely to accurately portray current site conditions. Environmental media sampled during investigations conducted at the site include on-site surface water and sediment, air, and groundwater. Air monitoring data was collected during the closure of Cell I at the same time soil excavating and moving operations were being conducted (2).

Contaminant	Maximum Concentrations (Reported as parts per billion [ppb])
Groundwater, 1981-89	
Cadmium	210
Chromium	210
Lead	440
Leachate*, 1984-88	
Arsenic	24
Benzene	12
Cadmium	30
Chromium	340
Cyanide	1,300
1,1-Dichloroethane	22
2,4-Dimethyphenol	220
Lead	480
Naphthalene	90
Phenol	2,000
Surface Water, 1984-1989	
Cadmium	30^
Chromium	200^
Phenol	55

*Leachate is discharged into sanitary sewer.

^Dissolved levels determined by analysis of filtered samples.

Contaminant	Maximum Concentrations (Reported as parts per billion [ppb])
Sediment, 1983-1989	
Total Chromium	9,800
Cadmium	3,600
Lead	12,000

Air[+], 1986
Reported and micrograms per cubic meter

Cadmium	0.007
Chromium	<0.080
Lead	0.242
Particulates	1,089

[+]An air monitoring station was located at the eastern edge of the site and adjacent to Interstate 94.

B. Quality Assurance and Quality Control

Quality assurance and quality control procedures were used to ensure the accuracy of the results of groundwater, surface water, sediment, and air sample collection and analyses. The conclusions contained in this report are based on the data package supplied to ATSDR. The accuracy of these conclusions is based on the reliability and comprehensiveness of the data contained in materials reviewed.

C. Physical and Other Hazards

The site is operated as a waste disposal facility and as such requires the use of heavy equipment. On-site earth moving equipment and on-site soil excavations may pose physical hazards to site trespassers, especially small children. Since access to the site is restricted the likelihood of human contact with on-site physical hazards is reduced.

PATHWAY ANALYSES

A. Environmental Pathways

1. Groundwater

Two aquifers are located within the site vicinity. The uppermost portion of the shallow aquifer generally lies within 10 feet of the ground's surface. The Michigan Department of Public Health does not allow drinking water wells to be screened at depths less than 25 feet below the ground

surface (3).

The deep aquifer is located approximately 70 feet below the site's ground surface. Groundwater from this aquifer is highly mineralized. Groundwater in the vicinity of the site flows to the east-southeast and does not serve as an important source of drinking water. Staff from the Wayne County Department of Public Health indicate that there are no known water wells within one mile of the site. Water for residential and commercial uses within the site vicinity is provided by the city of Detroit (4).

The subsoil profile at the APCM site consists of upper sands, from 3 to 7 feet thick, replaced by fill in some areas, underlain by a silty clay layer, from 65 to 70 feet thick, which in turn overlies the lower sands layer, ranging in thickness from 3 to 6 feet or more. Groundwater in the lower sands is under artesian pressure, with piezometric levels at or above the ground surface. These conditions indicate a confined aquifer with an upward hydraulic flow gradient (4).

Hydrogeologic conditions in the site vicinity, in particular the upward hydraulic flow gradient and the thickness (25 feet or greater) of the low permeability clay layer underlying the site, minimize the likelihood that the site will affect the water quality of the deep aquifer. Several contaminants were detected in groundwater samples collected from on-site monitoring wells screened in the deep aquifer; however, the highest levels of lead and cadmium were detected in monitoring wells located hydrologically upgradient of the site (2). Since background groundwater monitoring data were not available for comparative purposes, it is not possible to determine if the site serves as a source for groundwater contaminants.

2. Surface Water

Surface water samples were collected from a drainage ditch around the perimeter of the site and from a pond which serves as a discharge point for surface water runoff from the site. Results of sample analyses indicate that the surface water has not served as a pathway for contaminant transport and migration to off-site areas (2). On-site drainage controls and leachate collection systems, if maintained, should serve to prevent surface water from becoming a pathway for contaminant transport in the future.

3. Sediment

Sediment samples were collected from the on-site pond which collects surface water runoff from the site. Since wastes at the site are buried in excavated cells, under normal operations at the site, surface soil is not likely to become contaminated. Contaminant levels in sediments did not indicate erosion of surface soil was serving as a pathway for contaminant migration.

4. Air

Waste-associated contaminants may become airborne through fugitive dusts which are released during on-site activities or windy conditions. Once airborne, contaminants may migrate to off-site areas. Since the site is an active facility, dust is likely to be generated via on-site activities. Prevailing winds in the site vicinity are to the southwest.

Dust control measures currently used at the site (dust suppression with water sprays) should help minimize dust generation and the importance of the airborne pathway for contaminant migration.

5. Contaminated Food-Chain Entities

Contaminants found in waste disposed at the APCM site may bioaccumulate in foodchain entities; however, there are no animal or plant gathering activities conducted on-site, or immediately adjacent to the site. As a result, this pathway of contaminant transport should be of minimal importance at the APCM site.

B. Human Exposure Pathways

Although several contaminants at levels of public health concern were detected in wastes disposed at the site and on-site groundwater, available information does not indicate any completed human exposure pathways. If future development of groundwater resources within the site vicinity occurs, human exposure to groundwater contaminants through ingestion, dermal contact, or inhalation of volatilized contaminants is possible.

Since access to the site is restricted, human exposure to waste contaminants or groundwater contaminants through dermal contact is unlikely.

Air monitoring results, collected in 1986, did not indicate contaminants at levels of public health concern in on-site areas, therefore off-site residents should not be exposed to site contaminants through the inhalation pathway.

PUBLIC HEALTH IMPLICATIONS

The APCM site is not of public health concern because available sampling data and site conditions indicate that humans are currently not exposed to contaminants at levels of public health concern.

Local citizens have expressed concerns that the site has contributed to alleged increases in cancer rates. Two cancer incidence studies have been done by the Biostatistics Unit of the Michigan Cancer Foundation, Division of Epidemiology. The first study was made at the request of the Dearborn Health Department and was completed in 1983 (see Exhibit II).

In the initial study, all cancer cases diagnosed by place of residence between 1973 - 1981 (with the exception of non-melanoma skin cancers), were identified from the Michigan Cancer Foundation Cancer Surveillance System. Cancer rates of residents of the Snow Woods neighborhood (a residential portion of Dearborn Heights located adjacent to APCM site) were compared with those of three populations including the City of Dearborn, Wayne County, and the tri-county area (Wayne, Oakland, and Macomb counties). Since the population of the Snow Woods neighborhood and Dearborn is predominately white (over 98%) only cancer incidence rates in the white population segment were used for comparative purposes.

The observed number of cancer cases in the Snow Woods neighborhood were then compared with the expected number of cases (based on cancer rates in the comparative populations). Comparisons were also done by age and sex.

Of the 31 cancer site groups analyzed, 25 showed no statistically significant excess of cancer cases. These sites include: all sites combined, colon, pancreas, lung and bronchus, female breast, cervix, corpus uteri, leukemia, buccal cavity and pharynx, esophagus, anus, gallbladder, other biliary sites (including bile ducts, ampulla of vater and biliary tract, not otherwise specified), larynx, soft tissue, skin melanoma, ovary, testis, bladder, kidney, other nervous system (including the cranial nerve, spinal cord, cerebral and spinal meninges, and nervous system, not otherwise specified), thyroid, Hodgkin's lymphoma, non-Hodgkin's lymphoma, and ill-defined sites.

Results of the study indicated that the only statistically significant excess of cancer consistently found in the Snow Woods population during the 1973-1981 study period was for brain cancer in both males and females and for liver cancer in females. The expected values are calculated using incidence rates which are, in turn, based on population estimates for intercensal years. The reliability of these population estimates is variable and will influence the accuracy of incidence rates. Results of this study do not take into account place of residence, occupational history, smoking, and alcohol use, all of which may be related to cancer incidence.

The Michigan Cancer Foundation concluded that there was insufficient evidence that residents of the Snow Woods neighborhood are at a higher risk of cancer because of their proximity to the Allen Park Clay Mine site than residents of Dearborn, or white residents of either Wayne County or the entire tri-county area (5).

In 1989, a second study on the incidence of cancer in areas close to the Allen Park Clay Mine site was conducted in response to requests from the Michigan Department of Public Health and the Wayne County Health Department. The Michigan Cancer Foundation, Division of Epidemiology, also conducted this study. The Snow Woods neighborhood in Dearborn, the city of Melvindale, and the portion of Allen Park nearest the site were included in the cancer rate study (see Exhibit III).

Cancer incidence was determined by analyzing data from the Metropolitan Detroit Cancer Surveillance System. Place of residence was determined by census tract. Cancer incidence rates were used to determine whether the cancer rates of the vicinity around the Allen Park Clay Mine site were in excess of rates for comparison populations with similar demographic characteristics (but not living close to the site).

The two comparison populations selected included the city of Dearborn (excluding the Snow Woods Neighborhood) and Wayne County (excluding the three study communities). Since the populations in the study area are more than 95% white, comparisons were made only to the white segment of the reference population. Adjustments were made for racial, age, and sex differences. The study included comparison of 38 different types of cancer. In addition, a telephone survey was conducted of relatives of the 16 brain cancer cases that occurred among Snow Woods residents to obtain occupational, smoking, and residential histories.

Results of the study indicate that between 1973-1986 there were a total of 2,519 cancer cases diagnosed among residents of the three study areas. Based on the Dearborn comparative population, 2638 cases were expected (the study area population had 5% fewer cancer cases). Cancer cases for the study area were 8% lower than the expected number (2743) based on Wayne County cancer incidence rates.

In the analysis of 38 cancer sites, 32 demonstrated no consistent excess in the three study populations when compared to the reference populations. The cancer sites included cancers of the stomach, colon, rectum, liver, esophagus, small intestines, anus, gallbladder, pancreas, retroperitoneum, nasal cavity, larynx, lung and bronchus, trachea, bones and joints, soft tissues, prostate, testis, breast, cervix, ovary, vulva, kidney, ureter, other urinary system organs, eye, thyroid, and ill-defined sites, melanomas, Hodgkin's Disease, non-Hodgkin's lymphomas and leukemias.

The only finding of higher than expected cancer rates was seen in Snow Woods, where residents experienced 16 cases of brain cancer over the 14 year study period (6 brain cancer cases were expected based on rates of the two comparative populations). However, 12 of the brain cancer cases occurred during the first 9 years of the study while only 4 occurred during the last 5 years of the study period. Using the Wayne County population for comparative purposes, 4 cases occurred where 2.29 were expected, the excess brain cancer cases were not statistically significant.

To collect additional information, a telephone survey was conducted on 2 surviving cases and relatives of 12 of the deceased cases. The survey obtained information on residential history, smoking history, and occupational history. Interviews were not conducted for 2 cases because no relatives could be located.

Results of the telephone survey indicated that 9 of the 16 brain cancer cases lived in the site vicinity for 20 years or more. Of the 7 male cases all but 1 smoked and 5 out of the 7 worked in occupations with exposure to automobile engine exhaust for lengths of time ranging from 3-42 years. Only 1 of the 5 female brain cancer cases smoked and there was no consistent occupational history.

The cancer study concluded that there is no excess cancer incidence across all 3 communities during the 1973 - 1986 study period. The excess number of brain cancers observed during the study period cannot be attributed to the Allen Park Clay Mine site on the basis of data currently available. The study also concluded that the incidence of brain cancer in the Snow Woods neighborhood has declined over time and no longer occurs at rates significantly elevated above those in comparison populations in the non-study area.(6)

CONCLUSIONS

Based on the available information, the APCM site is not considered to currently be of public health concern. With the exception of a few groundwater samples, monitoring data do not indicate contaminants at levels of public health concern. Since groundwater within the site vicinity reportedly does not serve as a potable water source, there are no completed pathways for contaminant exposure. If future development of groundwater resources within the site vicinity occurs, human exposure to groundwater contaminants at levels of public health concern is possible.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended, the Allen Park Clay Mine site, Wayne County, Michigan, has been evaluated for appropriate follow-up with respect to health effects studies. Since there is no extant documentation or indication that human exposure to on-site or off-site contaminants is currently occurring or has occurred in the past, this site is not being considered for follow-up health studies at this time. In addition, two studies examining cancer incidence in areas adjacent to the site provided no evidence that the site influenced cancer incidence rates within the surrounding areas. However, if data become available suggesting that human exposure to significant levels of hazardous substances is currently occurring or has occurred in the past, ATSDR will reevaluate this site.

As additional information is received by ATSDR, such material will form the basis for further assessment as warranted by site-specific public health issues.

RECOMMENDATIONS

ATSDR recommends the following for the protection of public health:

1. Continue to restrict public access to the site.

2. Conduct air monitoring in on-site and off-site areas to determine the site's impact on air quality. Air sampling points should include downwind sampling stations.

3. Continue to implement measures to minimize the generation and release of dusts.

4. Conduct additional groundwater monitoring to determine the site's impact on groundwater within the site's vicinity. Monitoring wells should be placed both hydrologically downgradient and upgradient of the site in off-site areas.

5. A private well survey should be conducted within a 1-mile radius of the site to determine the location and use status of all wells.

PREPARERS OF REPORT

Environmental and Health Effects Reviewer:	Richard Earl Gillig M.C.P. Environmental Health Scientist Remedial Program Branch
ATSDR Regional Representative:	Denise Jordan-Izaguirre Public Health Advisor Support Services Branch

REFERENCES

1. Partial Closure Plan, Cell I, Ford Allen Park Clay Mine, Ford Motor Company-Environmental and Safety Engineering, January 10, 1986.

2. RCRA Facility Investigation Phase I Environmental Monitoring Report, Ford Allen Park Clay Mine Landfill. Ford Motor Company, Environmental and Safety Engineering, August 8, 1989.

3. Vertical Hydraulic Gradients, Allen Park Clay Mine Landfill, Neyer, Tiseo, and Hindo, LTD. March 29, 1985.

4. Hydrogeologic Study, Allen Park Clay Mine, Allen Park, Michigan, Michigan Testing Engineers, Inc., November 24, 1981.

5. Cancer Incidence Study of Snow Woods For the Years 1973-1981, Michigan Cancer Foundation, 1983.

6. Cancer Incidence Study of Snow Woods, Melvindale, and Allen Park For the Years 1973-1986. Schwartz, Ann G., Burns, Patricia B., Swanson, G. Marie, Division of Epidemiology Michigan Cancer Foundation, August 4, 1989.

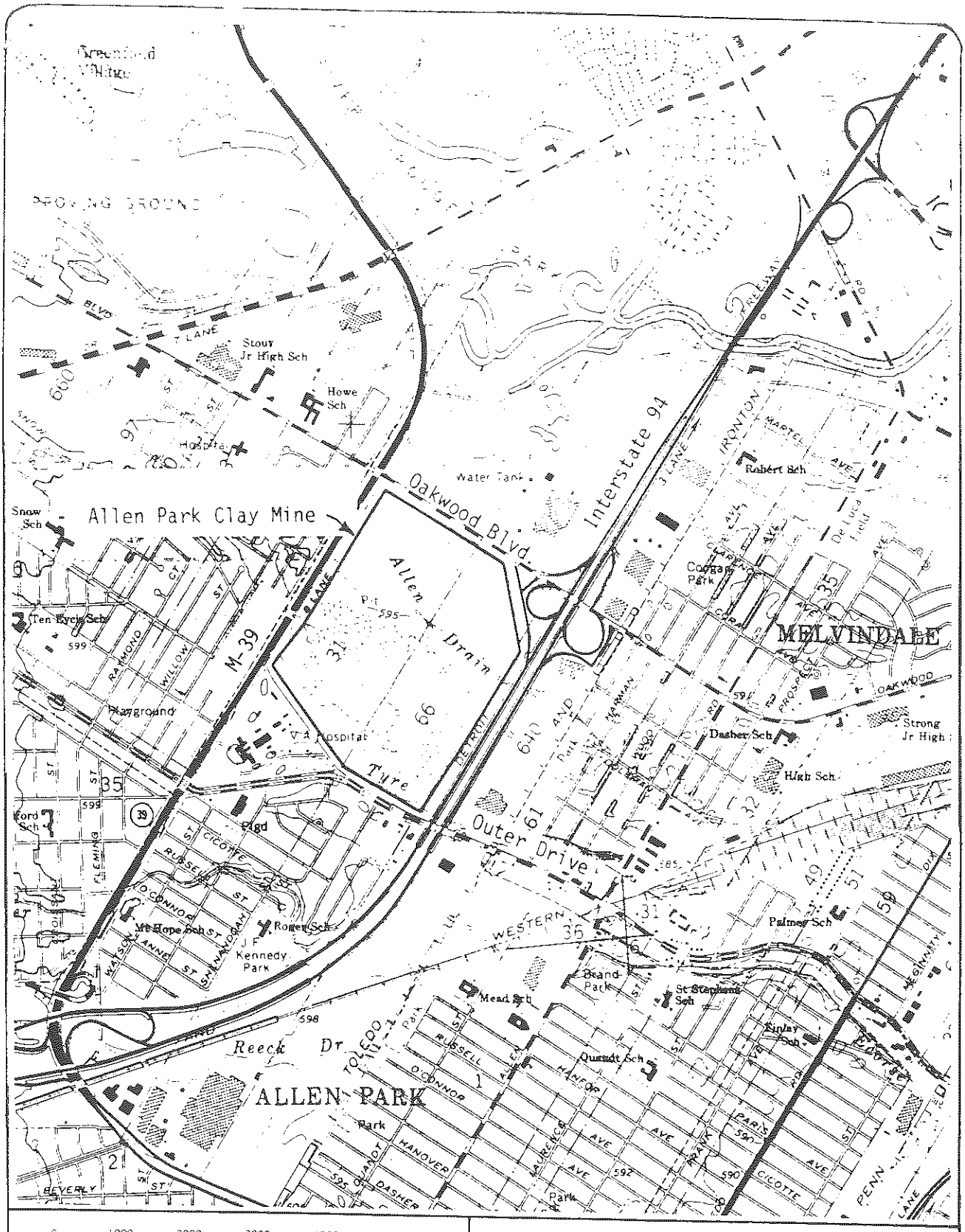

Allen Park Clay Mine
Oakwood Blvd.
Interstate 94
Allen Drain
Tyre
Outer Drive
Reeck Dr
ALLEN PARK
MELVINDALE
Stout Jr High Sch
Howe Sch
Snow Sch
Ten Eyck Sch
Playground
VA Hospital
Ford Sch
Roosevelt Sch
Mt Hope Sch
J F Kennedy Park
Robert Sch
Cougar Park
Dasher Sch
High Sch
Strong Jr High
Palmer Sch
Brand Park
St Stephens Sch
Mead Sch
Quandt Sch
Kinlay Sch
Park
M-39
0 1000 2000 3000 4000 5000
Scale - Feet
Contour Interval 5 Feet
Datum is Mean Sea Level
Allen Park Clay Mine
Disposal Landfill
Allen Park, Michigan
Wayne County

Figure 1

The MDNR has requested that numerous documents be included with this application which have been submitted during previous permit applications or during the construction of hazardous waste disposal Cell II. For information purposes, this application includes the MDNR requested documents.

Ten copies of this renewal application are also being submitted to the MDNR.

Should you have any questions concerning this submittal, please contact Jeff Hartlund of this Office at 313/322-0700.

Sincerely,

Jerome S. Amber, P.E., Manager
Wastes and Hazardous Substances
Environmental Quality Office
313/322-4646

Enclosures

cc: MDNR Waste Management Division (w/o attachments)
Mayors of Allen Park, Dearborn and Melvindale (w/o attachments)

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

November 9, 1993

Michigan Department of Natural Resources
Waste Management Division
Hazardous Waste Permits Unit
P.O. Box 30241
Lansing, Michigan 48909

Subject: **Ford Motor Company**
Allen Park Clay Mine Landfill - MID 980 568 711
Michigan Act 64 Operating License and Federal HSWA Permit Renewal Application

MDNR Waste Management Division:

Ten copies of the Michigan Department of Natural Resources (MDNR) Act 64 Operating License and Federal HSWA Permit renewal application for the Allen Park Clay Mine Landfill are being submitted today under separate cover (from RMT, Inc. - Madison) pursuant to Michigan Act 64 R 299.9510(5) and 40 CFR §270.10(h), respectively. Also enclosed with the application is a check for $500.00 covering the license renewal application fee.

Consistent with our timely September 25, 1990 permit modification submittal, the renewal application incorporates the addition of new waste codes to be accepted at the facility as well as updated information which will enable the facility to effectively manage these wastes. The 1990 permit modification submittal added additional Toxicity Characteristic hazardous waste codes (D018-D043), multi-source leachate (F039), and additional waste codes consistent with the leachate/liner compatibility testing program conducted pursuant to the existing HSWA permit.

Most sections of the existing MDNR Operating License/HSWA Permit have undergone review and subsequent modification as a result of 1) additional waste codes being added, or 2) incorporation of MDNR approved Cell II design/construction modifications. The groundwater monitoring program has remained unchanged.

Ford has carried out a leachate/liner compatibility testing program and constructed Cell II with materials which have been shown to be compatible with the leachate expected to be generated at the facility. Thus, Ford has satisfied the material conformance/compatibility requirements of 40 CFR 264.301 and MDNR Act 64 R 299.9505. As a result, no information on coupon testing procedures or protocol is included in the reapplication.

Per the request of Peter Quackenbush of MDNR, numerous documents are included which have been submitted with previous permit applications or during the construction of hazardous waste disposal Cell II.

Two copies of this renewal application are being submitted to the U.S. EPA - Region V Office in Chicago.

Should you have any questions concerning this submittal, please contact Jeff Hartlund of this Office at 313/322-0700.

Sincerely,

Jerome S. Amber

Jerome S. Amber, P.E., Manager
Wastes and Hazardous Substances
Environmental Quality Office
313/322-4646

cc: U.S. EPA Region V, Technical Permit Section (w/o attachments)
Mayors of Allen Park, Dearborn and Melvindale (w/o attachments)

LETTER OF TRANSMITTAL

RMT INC.

744 Heartland Trail
P.O. Box 8923
Madison, WI 53708-8923
Phone: (608) 831-4444
FAX: (608) 831-3334

DATE Nov. 11, 1993	JOB NO. 2804.05
ATTENTION Shari Kolak	
RE: Allen Park Clay Mine Landfill	
RCRA/Act 64 Operating License	
Renewal Application	

TO: USEPA

HRP-8J

77 West Jackson

Chicago, IL 60604

WE ARE SENDING YOU [⊠] Attached [ ] Under separate cover via _____ the following items:

[ ] Contract Documents [ ] Purchase Order [ ] Waiver of Lien [ ] Laboratory Analysis Report
[ ] Certificates of Insurance [ ] Copy of letter [ ] Plans [ ] _____

COPIES	DATE	NO.	DESCRIPTION
2	11/12/93		**MDNR Checklist for Submittal Documents**

THESE ARE TRANSMITTED as checked below:

[ ] FOR APPROVAL [ ] SIGN AND RETURN [⊠] FOR YOUR USE

[ ] APPROVED AS NOTED [ ] FOR REVIEW AND COMMENT [ ] AS REQUESTED

[ ] APPROVED AS SUBMITTED [ ] RETURNED FOR CORRECTIONS [ ] _____

REMARKS:

The enclosed checklist indicating the location within the application documents of the various pieces of information required by the regulations was inadvertently left out of your copies of the Allen Park Clay Mine Landfill RCRA submittal. You should have received the APCML application documents on November 10, 1993. The checklist should be inserted behind Tab 3 in Volume I of the application documents. If you have not received these documents, please let me know.

Thank you for your assistance.

COPY TO _____ File _____ SIGNED: _____

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DRAFT
7/91

ACT 64 CONSTRUCTION PERMIT/OPERATING LICENSE

APPLICATION REVIEW CHECKLIST

Facility Name Allen Park Clay Mine Landfill

EPA ID Number MID 980568711

Date Application Received November 1993

Permit Engineer _____ Geologist _____

	Complete Yes/No	Comments, Location in Application
I. GENERAL INFORMATION		
A. Application Form [R 299.9504(1)(b) and R 299.9508(1)(a)]		
1. information complete	Y	Volume I Tab 1/Tab 2
2. appropriate signatures	Y	Volume I Tab 1/Tab 2
B. Application Fee [R 299.9504(1)(a) and R 299.9508(1)(h)]		
1. amount calculation	Y	Volume I Tab 1 (MDNR Form 1)
2. payment	Y	Attached to Transmittal
C. Certification and Signatures [R 299.9504(10) and R 299.9508(3)]		
1. 40 CFR 270.11(d) wording	Y	Volume I Tab 1
2. owner	Y	Volume I Tab 1
3. operator	Y	Volume I Tab 1
4. titleholder of land	Y	Volume I Tab 1
D. Environmental Permits [R 299.9504(11) and R 299.9508(1)(f)]		
1. air (1965 P.A. 348)	NA	
2. NPDES (Clean Water Act)	Y	Applied for Volume I Tab 5
3. sewer discharge (Clean Water Act)	NA	
4. groundwater discharge (1929 P.A. 245)	NA	
5. UIC (Part C, SDWA; 40 CFR 144-148)	NA	
6. fire prevention (1941 P.A. 207)	NA	
7. miscellaneous other permits	Y	Volume I Tab 5

II. INFORMATION REQUIRED BY 40 CFR 270.14(b)
[R 299.9504(1)(c) and R 299.9508(1)(b)]

A. General Facility Description [40 CFR 270.14(b)(1)]	Y	Volume I Tab 6
1. location	Y	Volume I Tab 6
2. function (e.g., manufacturing, commercial)	Y	Volume I Tab 6
3. storage, treatment, and/or disposal	Y	Volume I Tab 6
4. waste types for each unit	Y	Volume I Tab 6
5. Description of SWMU's	Y	Volume I Tab 6
B. Chemical and Physical Analyses [40 CFR 270.14(b)(2)]		
1. waste evaluation form, or equivalent, for each waste stream	NA	Volume I See Tab y for Discussion
2. description of analytical procedures	NA	
C. Waste Analysis Plan [40 CFR 270.14(b)(3)]		
1. facility description	Y	Volume I Tab 6
2. identification of wastes to be managed	Y	Volume I Tab 1/Tab 2
3. process tolerance limits	Y	Volume I Tab 8
4. waste screening		
a. parameters for each waste stream	Y	Volume I Tab 8
b. sampling methods	Y	Volume I Tab 8
c. analysis methods	Y	Volume I Tab 8
d. QA/QC procedures	Y	Volume I Tab 8
5. annual recharacterization of waste streams		
a. parameters for each waste stream	Y	Volume I Tab 8
b. sampling methods	Y	Volume I Tab 8
c. analysis methods	Y	Volume I Tab 8
d. QA/QC procedures	Y	Volume I Tab 8
D. Security Procedures [40 CFR 270.14(b)(4)]		
1. 24-hour surveillance	Y	Volume I Tab 9
2. fence/barrier and means to control entry	Y	Volume I Tab 9
3. signs	Y	Volume I Tab 9
E. Inspection Schedule [40 CFR 270.14(b)(5)]		
1. procedures and frequency	Y	Volume I Tab 9

2. inspection forms

a. each unit	Y	Volume I Tab 9
b. safety/emergency equipment	Y	Volume I Tab 9
c. monitoring equipment	Y	Volume I Tab 9

3. form content

a. all components of unit	Y	Volume I Tab 9 Attachment 9A-9C
b. potential problems	Y	Volume I Tab 9 Attachment 9A-9C
c. date and time	Y	Volume I Tab 9 Attachment 9A-9C
d. name of inspector	Y	Volume I Tab 9 Attachment 9A-9C
e. remedial actions	Y	Volume I Tab 9 Attachment 9A-9C

F. Preparedness and Prevention Waiver [40 CFR 270.14(b)(6)] NA

G. Contingency Plan [40 CFR 270.14(b)(7)]

1. general facility description	Y	Volume I Tab 10
2. response to fires, explosions, releases	Y	Volume I Tab 10
a. air	Y	Volume I Tab 10
b. soil	Y	Volume I Tab 10
c. water	Y	Volume I Tab 10

3. arrangements with local officials

a. police	Y	Volume I Tab 10
b. fire	Y	Volume I Tab 10
c. emergency response	Y	Volume I Tab 10
d. hospital	Y	Volume I Tab 10

4. list of emergency coordinators (minimum of two)

a. name	Y	Volume I Tab 10
b. order designation	Y	Volume I Tab 10
c. work phone numbers	Y	Volume I Tab 10
d. home addresses	Y	Volume I Tab 10
e. home phone numbers	Y	Volume I Tab 10

5. list of emergency equipment

a. location of each piece	Y	Volume I Tab 10
b. description of each piece	Y	Volume I Tab 10
c. capability of each piece	Y	Volume I Tab 10

6. evacuation plan

a. signal	Y	Volume I Tab 10
b. primary route on facility map	Y	Volume I Tab 10
c. alternate route on facility map	Y	Volume I Tab 10
7. reporting implementation	Y	Volume I Tab 10
8. changes to plan and copy distribution	Y	Volume I Tab 10

H. Preventative Procedures [40 CFR 270.14(b)(8) and (9)]		
1. hazard prevention (e.g., during unloading)	Y	Volume I Tab 9
2. runoff, flooding control	Y	Volume I Tab 9
3. prevent contamination of water resources	Y	Volume I Tab 9
4. mitigate effects of equipment failure and power outages	Y	Volume I Tab 9
5. employee protection	Y	Volume I Tab 9
6. prevention of ignition, reaction	Y	Volume I Tab 9
7. management of incompatibles	Y	Volume I Tab 9
I. Traffic Information [40 CFR 270.14(b)(10)]		
1. amount and kind	Y	Volume I Tab 9
2. patterns, signs, and signals on map	Y	Volume I Tab 9
3. local roads, access routes	Y	Volume I Tab 9
J. Floodplain Information [40 CFR 270.14(b)(11)]		
1. FIA (or equivalent) map with facility location	Y	Volume I Tab 6/Volume II Tab 1 Engineering Plans
2. in floodplain: design to withstand 100 year flood	NA	
K. Personnel Training Program [40 CFR 270.14(b)(12)]		
1. hazardous waste management position descriptions		
a. job title	Y	Volume I Tab 9
b. job description	Y	Volume I Tab 9
c. job requirements	Y	Volume I Tab 9
2. type of training for each job (relevance to duties)	Y	Volume I Tab 9
3. program description		
a. director	Y	Volume I Tab 9
b. structure	Y	Volume I Tab 9
c. frequency	Y	Volume I Tab 9
4. initial training program outline		
a. hazardous waste management	Y	Volume I Tab 9
b. emergency procedures	Y	Volume I Tab 9
c. environmental monitoring	Y	Volume I Tab 9
5. annual review training program outline		
a. hazardous waste management	Y	Volume I Tab 9
b. emergency procedures	Y	Volume I Tab 9
c. environmental monitoring	Y	Volume I Tab 9

6. training records		
a. current employees' records maintained until closure	Y	Volume I Tab 9
b. past employees' records maintained for three years from departure	Y	Volume I Tab 9
L. Closure Plan [40 CFR 270.14(b)(13)]		
1. description of facility and closure	Y	Volume I Tab 12
2. waste removal	Y	Volume I Tab 12
3. decontamination, removal of structures and equipment	Y	Volume I Tab 12
4. soil sampling	Y	Volume I Tab 12
a. locations and methods	Y	Volume I Tab 12
b. analysis parameters and methods	Y	Volume I Tab 12
c. statistical methods	Y	Volume I Tab 12
d. determination of contamination		
5. remediation	Y	Volume I Tab 12
6. schedule	Y	Volume I Tab 12
a. all activities	Y	Volume I Tab 12
b. 180 days maximum		
7. certification	Y	Volume I Tab 12
a. contents	Y	Volume I Tab 12
b. 40 CFR 270.11(d) statement	Y	Volume I Tab 12
c. 60 days after closure		
M. Post-Closure Plan [40 CFR 270.14(b)(13)]		
1. See Post-Closure plan checklist	Y	Volume I Tab 13
N. Post-Closure Notices [40 CFR 270.14(b)(14)]		
1. restrictive covenant	Y	Volume I Tab 13
2. waste location map	Y	Volume I Tab 12
O. Closure Cost Estimate [40 CFR 270.14(b)(15)]		
1. itemized	Y	Volume I Tab 12
2. current, third-party cost	Y	Volume I Tab 12
P. Post-Closure Cost Estimate [40 CFR 270.14(b)(16)]		
1. itemized	Y	Volume I Tab 12
2. current, third-party cost	Y	Volume I Tab 12

Q. Financial Assurance Mechanism
[40 CFR 270.14(b)(15) and (16)] [R 299.9508(1)(e)]

1. proper amount	Y	Volume I Tab 12/ Tab 13
2. Michigan form	Y	Volume I Tab 12/Tab 13

R. Liability Coverage [40 CFR 270.14(b)(17) and R 299.9508(1)(e)]

1. endorsement form	Y	Volume I Tab 12/Tab 13
2. cancellation waiver form	NA	

S. Topographic Map [40 CFR 270.14(b)(19)]

1. facility location and 1000 feet around	Y	Volume II and Volume III contain Supplemental Information on site design including engineering and hydrogeologic studies referenced t these volumes for this
2. proper scale (1 inch = 200 feet)	Y	
3. contours	Y	
4. information		
a. scale and date	Y	
b. 100-year floodplain area	Y	
c. surface waters	Y	
d. surrounding land uses	Y	
e. wind rose	Y	
f. north arrow	Y	
g. legal boundaries of site	Y	
h. access control	Y	
i. injection and withdrawal wells (on and off site)	NA	
j. all structures (including roads, sewers, etc.)	NA	
k. barriers for drainage	NA	
l. all hazardous waste management areas	NA	Volume I Tab 6

T. Compliance with Federal Law Statement
[40 CFR 270.14(b)(20)] — Y — Volume III Tab 17

III. HYDROGEOLOGICAL REPORT [R 299.9504(1)(d) and R 299.9508(1)(b)]

Separate checklist is available from Geotechnical Support Unit. — Y — Volume III Tabs 14 through 16

IV. ENVIRONMENTAL ASSESSMENT [R 299.9504(1)(e) and R 299.9508(1)(b)]

A. Impact on Air, Water, and Natural Resources

1. routine operation	Y	Volume III Tab 17
2. failures	Y	Volume III Tab 17

B. Failure Mode Assessment

1. transport	Y	Volume III Tab 17
2. loading/unloading	Y	Volume III Tab 17
3. operations	Y	Volume III Tab 17

C. Exposure Information

1. pathways of human exposure	Y	Volume III Tab 17
2. potential magnitude and nature of human exposures	Y	Volume III Tab 17

V. ENVIRONMENTAL MONITORING [R 299.9504(1)(f) and R 299.9508(1)(b)]

A. Program Description or Waiver Demonstration

1. soil	Y	Volume III Tab 11
2. ambient air	Y	Volume III Tab 11
3. groundwater	Y	Volume III Tab 11
4. sewer effluent	Y	Volume III Tab 11
5. surface water	Y	Volume III Tab 11

B. Monitoring Specifications (Each item in V.A. must be addressed. If complete, circle appropriate number 1-5.

1. locations	1 2 3 4 5	Y	Volume III Tab 11
2. parameters	1 2 3 4 5	Y	Volume III Tab 11
3. sampling and analysis procedures	1 2 3 4 5	Y	Volume III Tab 11
4. frequency	1 2 3 4 5	Y	Volume III Tab 11
5. background	1 2 3 4 5	Y	Volume III Tab 11
6. statistical methods	1 2 3 4 5	Y	Volume III Tab 11
7. response to contamination	1 2 3 4 5	Y	Volume III Tab 11
8. reporting	1 2 3 4 5	Y	Volume III Tab 11

VI. ENGINEERING PLANS [R 299.9504(1)(g) and R 299.9508(1)(b)]

Vol II - Vol III Supplemental Information - see Table of Contents

A. Sufficient views, elevations, sections, and layouts to define equipment and process. ____ ____

			Vol II - Vol III Supplemental Information - see Table of Contents
B.	Specifications on all construction materials and installation methods.	Y	See above
C.	Basis of design for all process equipment and containment structures.	Y	See above
D.	Flow diagram of entire process.	Y	See above
E.	Design capacity of each process.	Y	See above

VII. CONTAINER STORAGE [R 299.9504(2) and R 299.9508(1)(b)]

A.	Management		
1.	number and location of containers (diagram)	NA	
2.	aisle space	NA	
3.	labeling	NA	
4.	prevent contact with standing liquids	NA	
B.	Secondary Containment and Drainage		
1.	capacity	NA	
2.	water stops and sealant	NA	
C.	Prevention or Management of Run-on	NA	
D.	Management of Accumulated Liquids		
1.	disposal within 24 hours	NA	
2.	analysis parameters and methods	NA	
E.	Management of Ignitable, Reactive, Incompatible Wastes	NA	

VIII. TANK SYSTEMS [R 299.9504(3) and R 299.9508(1)(b)]

A.	Tank Assessment (if applicable) [40 CFR 264.191]	NA	
B.	Dimensions and Capacity of Each Tank	NA	
C.	Description of Feed Systems and Pressure Controls	NA	
D.	Diagram of Piping, Instrumentation, and Process Flow	NA	
E.	Corrosion Protection	NA	
F.	Installation Procedures	NA	

G. Secondary Containment [40 CFR 264.193]

1. Designed, installed and operated to prevent migration of waste out of the system — NA

2. Capable of detecting and collecting releases and accumulated liquids — NA

H. Spill and Overflow Prevention — NA

I. Management of Ignitable, Reactive, Incompatible Wastes — NA

IX. INCINERATION [R 299.9504(4) and R 299.9508(1)(b)]

A. Trial Burn Plan [40 CFR 270.62(b)(2)] — NA

B. Operating Conditions During Trial Burn [40 CFR 264.343]

1. waste constituent restrictions — NA

2. waste feed rates — NA

3. operating parameters — NA

OR C. Equivalent Information

1. analysis of each waste to be burned — NA

2. engineering description of incinerator — NA

3. demonstration that trial burn is not needed — NA

4. design and operating conditions and comparison to available burn data — NA

5. previous trial burn information — NA

6. expected incinerator operation information — NA

7. supplemental information as required — NA

X. TREATMENT [R 299.9504(5)]

A. Demonstration that Treatment Will:

1. change the physical, chemical, or biological characteristics — NA

2. neutralize — NA

3. recover energy or material resources — NA

4. render the waste nonhazardous — NA

B. Demonstration that toxic constituents are chemically bound or rendered nonhazardous — NA

C. Proper treatment technique, feed rates and operating conditions — NA

D. Will hazardous waste have any detrimental effect on the materials used for construction — NA

E. Will hazardous waste contain constituents which might interfere with the treatment process F. — NA

G. Will hazardous waste form toxic contstiuents with the treatment chemicals — NA

H. Trial/Pilot Testing Results — NA

XI. SURFACE IMPOUNDMENTS [R 299.9504(b) and R 299.9508(1)(b)]

A. Information Required by 40 CFR 270.17

1. List of hazardous waste placed in each surface impoundment — NA
2. Plans and engineering report — NA
3. Surface impoundment inspection requirements — NA
4. Certification of integrigy of each dike — NA
5. Procedure for removing a surface impoundment from service — NA
6. Description of how materials will be removed at closure — NA
7. Compliance with 264.229 — NA
8. Compliance with 264.230 — NA
9. Compliance with 264.231 — NA

B. Liner, Leachate Collection, Leak Detection System Design [R 299.9505] — NA

XII. WASTE PILES [R 299.9504(7) and R 299.9508(1)(b)]

A. Information Required by 40 CFR 270.18

1. List of hazardous wastes to be placed in each waste pile — NA
2. Exemption under 264.251 and 264 Subpart F — NA
3. Plans and engineering report — NA
4. Inspection requirements — NA

5. Details of treatment process and equipment used and the nature and quality of the residuals	NA	
6. Compliance with 264.256	NA	
7. Compliance with 264.257	NA	
8. Description of how materials will be removed at closure	NA	
9. Compliance with 264.259	NA	
B. Liner, Leachate Collection, Leak Detection System Design [R 299.9505]	NA	

XIII. LANDFILLS [R 299.9504(8) and R 299.9508(1)(b)]

A. Information Required by 40 CFR 270.21		
1. List of hazardous waste to be placed in each landfill cell	Y	Volume I Tab 1/Tab 2
2. Plans and engineering report	Y	Volume II - Volume III
3. Exemption under 264.302(a)	Y	Volume I Tab 10
4. Inspection requirements	Y	Volume I Tab 9
5. Description of final cover and maintenance and monitoring of landfill after closure	Y	Volume I Tab 12 and Tab 13
6. Compliance with 264.312	Y	Volume I Tab 8
7. Compliance with 264.313	Y	Volume I Tab 8
8. Compliance with 264.314(a)	Y	Volume I Tab 8
9. Compliance with 264.315 or 264.316	Y	Volume I Tab 8
10. Compliance with 264.317	Y	Volume I Tab 8
B. Liner, Leachate Collection, Leak Detection System Design [R 299.9505]	Y	Volume II - Volume III
C. Final Cover Design [R 299.9619(b)]	Y	Volume I Tab 12

XIV. LAND TREATMENT [R 299.9504(9) and R 299.9508(1)(b)]

A. Information required by 40 CFR 270.20	NA	

XV. LOCATION STANDARDS [R 299.9603]

A. Prohibited Areas		Volume II - Engineering Plans
1. within 61 meters of a fault		Volume II - Engineering Plans
2. in a floodway pursuant to Act 245		Volume II - Engineering Plans

3. coastal high risk area	NA	Volume II - Volume III
4. over a sole-source aquifer	NA	Volume II - Volume III
5. within isolation distance of public water supply	NA	Volume II - Volume III
6. in a wetland	NA	Volume II - Volume III
B. Isolation Distances		
1. landfills: 150 m	NA	Volume II - Volume III
2. other: 60 m	NA	Volume II - Volume III
C. Flood plain restrictions	NA	Volume I Tab 6
D. Clay permeability	NA	Volume II - Volume III

XVI. FACILITY DESIGN AND OPERATING STANDARDS [R 299.9604]

A. Run-on Management (24 hour, 25 year storm)	Y	Volume I Tab 9
B. Run-off Management (24 hour, 100 year storm)	Y	Volume I Tab 9
C. Prevent Contamination of Soil, Surface Water, Groundwater, Sewers	Y	Volume I Tab 9

XVII. MANIFEST SYSTEM [R 299.9608]

A. Review of Incoming Manifests		Volume I Tab 10
B. Rail or Water Shipments	NA	
C. Outgoing Shipments - Part 3	NA	
D. Discrepancies - Rejected Load Procedures		Volume I Tab 8

XVIII. RECORDKEEPING [R 299.9609]

A. Operating Record	Y	Volume I Tab 10
B. Records Retained for 3 Years - Extended During Enforcement	Y	Volume I Tab 10
C. Availability of Records	Y	Volume I Tab 10
D. Waste Disposal Locations	Y	Volume I Tab 10

X. REPORTING [R 299.9610]

A. Biennial Report	Y	Volume I Tab 10
B. Unmanifested Waste Report	Y	Volume I Tab 10

C. Monthly Operating Report	Y	Volume I Tab 10
D. Report Certifications According to 40 CFR 270.11(d)	Y	Volume I Tab 10

XX. DISCLOSURE STATEMENT [299.518(4)]

A. Names and Addresses of:		
1. applicant	NA	
*2. five persons holding largest shares	NA	
3. operator	NA	
4. three employees with most day-to-day responsibility	NA	
*5. any business which persons 1 to 4 have had greater than or equal to 25% equity, at any time	NA	
B. All Convictions of Environmental Law Violations	NA	
C. All Revoked Environmental Permits	NA	
D. Contamination Not Remediated Voluntarily and Expiditiously by Company	NA	

*May be waived if stock is publicly traded.

XXI. CERTIFICATION OF CAPABILITY [R 299.9508(1)(d)]

A. Capability of Each Unit	Y	Volume I Tab 4
B. Signed and Sealed by Registered P.E.	Y	Volume I Tab 4
C. 40 CFR 270.11(d) Wording	Y	Volume I Tab 4

RMT INC.

LETTER OF TRANSMITTAL

744 Heartland Trail
P.O. Box 8923
Madison, WI 53708-8923
Phone: (608) 831-4444
FAX: (608) 831-3334

DATE Nov. 16, 1993	JOB NO. 2804.05
ATTENTION Shari Kolak	
RE: Figure 10A-1	
Allen Park Clay Mine Landfill	
RCRA/Act 64 Operating License	
Renewal Application	

TO: USEPA

HRP-8J

77 West Jackson

Chicago, IL 60604

WE ARE SENDING YOU [⊠] Attached [ ] Under separate cover via _____ the following items:

[ ] Contract Documents [ ] Purchase Order [ ] Waiver of Lien [ ] Laboratory Analysis Report
[ ] Certificates of Insurance [ ] Copy of letter [ ] Plans [ ] _____

COPIES	DATE	NO.	DESCRIPTION
2	11/16/93		Figure 10A-1

THESE ARE TRANSMITTED as checked below:

[ ] FOR APPROVAL [ ] SIGN AND RETURN [⊠] FOR YOUR USE

[ ] APPROVED AS NOTED [ ] FOR REVIEW AND COMMENT [ ] AS REQUESTED

[ ] APPROVED AS SUBMITTED [ ] RETURNED FOR CORRECTIONS [ ] _____

REMARKS:

Please replace the existing Figure 10A-1 with the attached Figure 10A-1.

Thank you for your assistance.

COPY TO File SIGNED: [signature]

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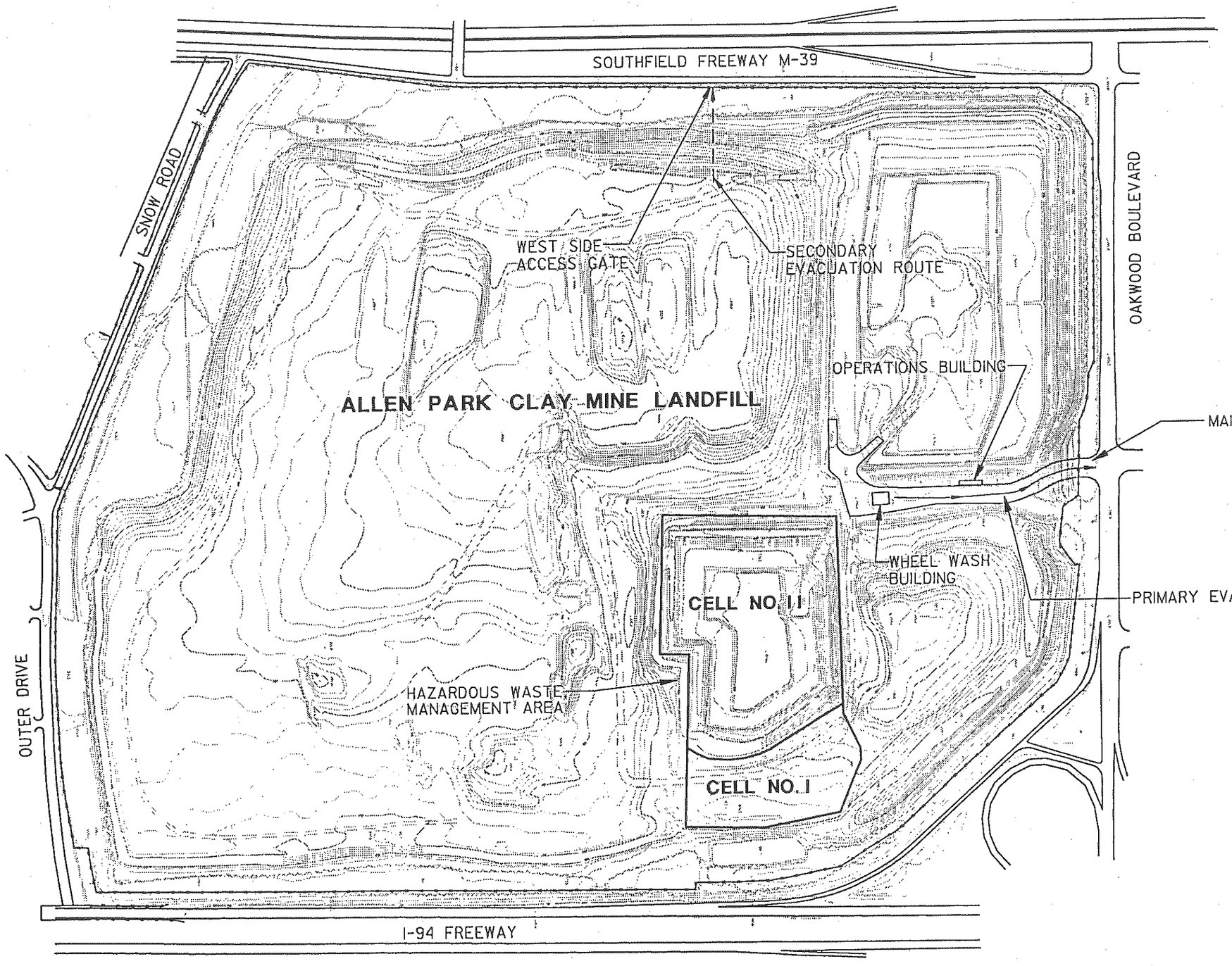


LEGEND

PRIMARY EVACUATION ROUTE

SECONDARY EVACUATION ROUTE

NOTES

1. BASE MAP TAKEN FROM AN APRIL 1993 AERIAL SURVEY BY ABRAMS AERIAL SURVEY CORP.
2. HAZARDOUS WASTE CELL BOUNDARIES BASED ON THE LEGAL DESCRIPTION IN THE RESTRICTIVE COVENANT.

0 400 800

SCALE: 1"=400'

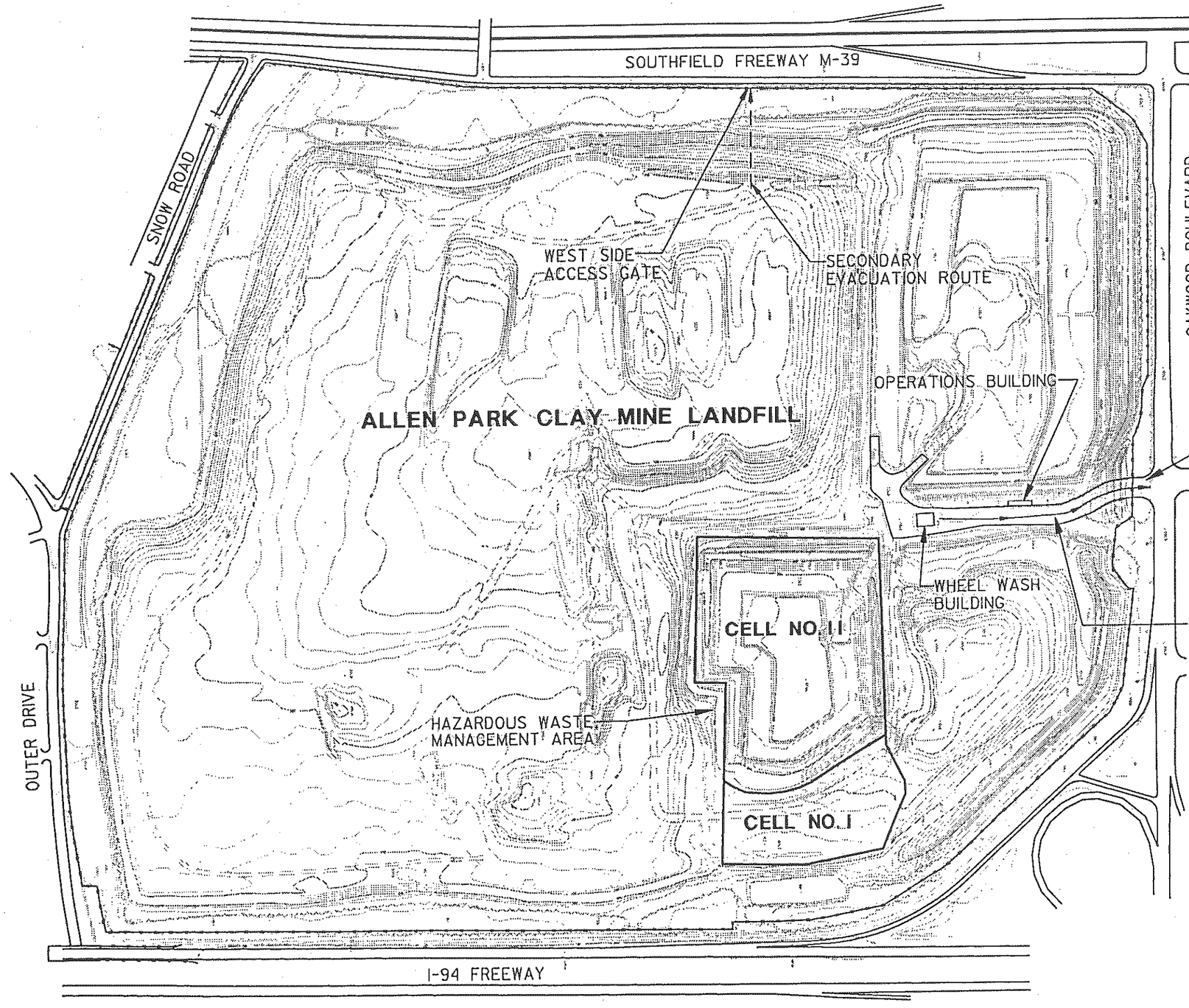
CONTINGENCY SITE PLAN
RCRA/ACT 64 OPERATING LICENSE APPLICATION
FORD MOTOR COMPANY
ALLEN PARK, MICHIGAN

	DWN. BY: TBM
	APPROVED BY:
	DATE: NOVEMBER 1993
	PROJ. # 2804.05
	FILE # 2804051l.dgn

EPA ID# MID980568711

CAD COMPUTER AIDED DESIGN & DRAFTING

FIGURE 10A-1



LEGEND

PRIMARY EVACUATION ROUTE

SECONDARY EVACUATION ROUTE

NOTES

1. BASE MAP TAKEN FROM AN APRIL 1993 AERIAL SURVEY BY ABRAMS AERIAL SURVEY CORP.
2. HAZARDOUS WASTE CELL BOUNDARIES BASED ON THE LEGAL DESCRIPTION IN THE RESTRICTIVE COVENANT.

0 400 800

SCALE: 1"=400'

CONTINGENCY SITE PLAN
RCRA/ACT 64 OPERATING LICENSE APPLICATION
FORD MOTOR COMPANY
ALLEN PARK, MICHIGAN

	DWN. BY: TBM
	APPROVED BY:
	DATE: NOVEMBER 1993
	PROJ. # 2804.05
	FILE # 280405ll.dgn

EPA ID# MID980568711

IDH COMPUTER AIDED DESIGN & DRAFTING

FIGURE 10A-1

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 602
15201 Century Drive
Dearborn, Michigan 48120

June 26, 1995

U.S. EPA - Region V, HRP-8J
Technical Permits Section, Michigan Unit
77 W. Jackson Blvd
Chicago, Illinois 60604

Subject: **Ford Motor Company**
Allen Park Clay Mine Landfill - MID 980 568 711
Response to MDNR Technical Notice of Deficiency

Technical Permits Section:

Two copies of revisions to the Michigan Department of Natural Resources (MDNR) Act 451 (Part 111) Operating License and Federal HSWA Permit renewal application for the Allen Park Clay Mine Landfill are being submitted to you separately by RMT, Inc. of Madison, Wisconsin. These revisions are submitted in response to the May 9, 1995 Technical Notice of Deficiency issued by Mr. Peter Quackenbush of the MDNR Waste Management Division. Revisions are assembled using the "replacement page" format as requested. Additional instructions are provided to facilitate the substitution of revised pages for original pages. Pursuant to discussions with Mr. Quackenbush of MDNR, the Cell II liner evaluation work plan is under development and will be submitted at a later date.

Seven copies of these revisions have been submitted to the MDNR.

Should you have any questions concerning this submittal, please contact Jeff Hartlund of this Office at 313/322-0700.

Sincerely,

Jerome S. Amber, P.E., Manager
Site Management and Investigation
Environmental Quality Office
313/322-4646

Enclosures

cc: MDNR Waste Management Division (w/out attachments)
Mayors of Allen Park, Dearborn and Melvindale (w/out attachments)

FORD MOTOR COMPANY *INTEROFFICE MEMORANDUM*

DATE: June 30, 1995

TO: DOCUMENT REVIEWERS

FROM: FORD

SUBJECT: REVISIONS TO THE ALLEN PARK CLAY MINE LANDFILL OPERATING LICENSE RENEWAL APPLICATION DATED NOVEMBER 1993

To facilitate the review of the revisions to the operating license renewal application documents, we have included one copy of the revised text showing revisions and changes. ~~Strikeouts~~ indicate where information has been deleted from the original submittal; redlines indicate where information has been added to the original submittal. Additional copies (without redlines or strikeouts) have been provided for insertion into the original application documents.

In addition, we have provided a list of revisions we have made to the document to bring it into compliance with ongoing activities at the site.

Section 6. General Information

1. Replace the original Table of Contents for this section with the attached Table of Contents.

2. Replace the existing page 6-1 to 6-2 with the attached pages 6-1 to 6-3.

3. In Subsection 6.2, we have revised the text to indicate that, in the future, Ford may revise the effluent discharge location for the landfill. This change, which does not affect discharge limits on water quality, has been included to reflect ongoing discussions with the Detroit Water and Sewerage Department.

Section 8. Waste Analysis Plan

1. Replace the original Table of Contents for this section with the attached Table of Contents

2. Replace the existing pages 8-2, 8-4, 8-6, and 8-10 through 8-13 of the original text with the attached pages 8-2, 8-4, 8-6, and 8-10 through 8-13.

3. Replace the existing attachments with the attached attachments:
   Attachment 8H
   Attachment 8I

4. Add the new Attachment 8J at the end of this section of the document.

5. Changes to this section have been included to reflect comments in the May 9, 1995, comment letter from the Michigan Department of Natural Resources (MDNR).

7/11-37

Section 9. Site Operations

1. Replace the original Table of Contents for this section with the attached Table of Contents.

2. Replace the existing pages 9-7, 9-8, 9-13, 9-14, and 9-16 with the revised pages 9-7, 9-8, 9-13, 9-14, and 9-16.

3. Replace the existing Attachment 9A with the attached Attachment 9A.

4. Replace the existing Attachment 9B with the attached Attachment 9B.

5. Replace the existing Attachment 9C with the attached Attachment 9C.

6. Replace the existing Attachment 9D with the attached Attachment 9D.

7. Changes to this section have been included to reflect comments in the May 9, 1995, comment letter from the Michigan Department of Natural Resources (MDNR).

Section 10. Contingency Plan

1. Replace the original Table of Contents for this section with the attached Table of Contents.

2. Replace the existing pages 10-1 through 10-9 with the revised pages 10-1 through 10-9.

3. Changes to this section have been included to reflect comments in the May 9, 1995, comment letter from the Michigan Department of Natural Resources (MDNR). In addition, the following revisions to the original documents have been incorporated into this submittal:

    - Letters notifying local governmental agencies about emergency procedures at the landfill will be sent out following the MDNR's approval of the operating license renewal application. This is a change from the previous submittal, which indicated that letters were already mailed.

Section 11. Environmental Monitoring Plan

1. Replace this section in its entirety with the attached Section 11, except for Attachment 11A which should be retained from the existing document.

2. Since the changes to this section were relatively broad, to improve the document's readability, we have not included a copy of the document showing redlines and strikeouts.

3. Changes to this section have been included to reflect comments in the May 9, 1995, comment letter from the Michigan Department of Natural Resources (MDNR). In addition, the following revisions to the original documents have been incorporated into this submittal:

    - On the basis of discussions with the MDNR, we have proposed an alternative procedure and list of parameters for monitoring at the landfill. Aluminum, which was included in the previous sampling program, has been deleted from the proposed parameter list since it is not included in the Appendix IX list of metals. The justification for development of the revised procedures and parameter list is included in the text of Section 11.

- In the original submittal, there was a typographical error in listing the monitoring parameters for the lysimeter. This has been corrected in this submittal.

- We have changed the time frame for submittal of the annual report from 45 days to 90 days after the first of each year.

Section 12. Closure Plan

1. Replace the original Table of Contents for this section with the attached Table of Contents.

2. Replace existing pages 12-1 through 12-22 with the revised pages 12-1 through 12-22.

3. In Attachment 12B, delete the existing closure cost estimate and replace with the revised closure cost estimate dated June 1995.

4. Changes to this section have been included to reflect comments in the May 9, 1995, comment letter from the Michigan Department of Natural Resources (MDNR). In addition, the following revisions to the original documents have been incorporated into this submittal:

   - The final cover system has been redesigned to reflect the current standard-of-practice for landfill cover systems. This change has also been reflected in the technical specifications provided in the closure plan.

Section 13. Post-Closure Plan

1. Replace existing pages 13-1 through 13-3 and 13-6 with the revised pages 13-1 through 13-3 and 13-6.

2. Changes to this section have been included to reflect comments in the May 9, 1995, comment letter from the Michigan Department of Natural Resources (MDNR).

Environmental and Safety Engineering Staff
Ford Motor Company
Suite 608
15201 Century Drive
Dearborn, Michigan 48120

November 9, 1993

U.S. EPA - Region V, HRP-8J
Technical Permits Section, Michigan Unit
77 W. Jackson Blvd
Chicago, Illinois 60604

Subject: **Ford Motor Company**
Allen Park Clay Mine Landfill - MID 980 568 711
Michigan Act 64 Operating License and Federal HSWA Permit Renewal Application

Technical Permits Section:

Two copies of the Michigan Department of Natural Resources (MDNR) Act 64 Operating License and Federal HSWA Permit renewal application for the Allen Park Clay Mine Landfill are being submitted today under separate cover (from RMT, Inc. - Madison) pursuant to Michigan Act 64 R 299.9510(5) and 40 CFR §270.10(h), respectively. Consistent with our timely September 25, 1990 permit modification submittal, this renewal application incorporates the addition of new waste codes to be accepted at the facility as well as updated information which will enable the facility to effectively manage these wastes. The 1990 permit modification submittal added additional Toxicity Characteristic hazardous waste codes (D018-D043), multi-source leachate (F039), and additional waste codes consistent with the leachate/liner compatibility testing program conducted pursuant to the existing HSWA permit.

Most sections of the existing MDNR Operating License/HSWA Permit have undergone review and subsequent modification as a result of 1) additional waste codes being added, or 2) incorporation of MDNR approved Cell II design/construction modifications. The groundwater monitoring program has remained unchanged. Consistent with an October 7, 1993 telephone discussion between Shari Kolak of the U.S. EPA, RMT, Inc. - Madison, and Jeff Hartlund of this Office, the previously submitted ***RFI - Phase I Environmental Monitoring Report*** dated August 8, 1989 is being included in its original form.

The MDNR has requested that numerous documents be included with this application which have been submitted during previous permit applications or during the construction of hazardous waste disposal Cell II. For information purposes, this application includes the MDNR requested documents.

Ten copies of this renewal application are also being submitted to the MDNR.

Should you have any questions concerning this submittal, please contact Jeff Hartlund of this Office at 313/322-0700.

Sincerely,

Jerome S. Amber, P.E., Manager
Wastes and Hazardous Substances
Environmental Quality Office
313/322-4646

Enclosures

cc: MDNR Waste Management Division (w/o attachments)
Mayors of Allen Park, Dearborn and Melvindale (w/o attachments)

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

Stevens T. Mason Building, P.O. Box 30028, Lansing, MI 48909

ROLAND HARMES, Director

August 19, 1992

Mr. David O'Connor
Environmental Quality Office
Ford Motor Company
Suite 608
15201 Century Drive
Dearborn, Michigan 48120

Dear Mr. O'Connor:

SUBJECT: Ford Allen Park Clay Mine
Landfill Cell II Re-Design
MID 980 568 711

The Waste Management Division (WMD) has reviewed the revised engineering plans and specifications for Cell II of the Allen Park Clay Mine hazardous waste landfill submitted on April 21, 1992.

The plans and specifications satisfy the landfill design requirements of Michigan's Hazardous Waste Management Act, 1979 P.A. 64, as amended, and are hereby approved with the following modifications:

1. The six inch secondary leachate removal pipe as shown in the "Typical Pipe Boot Detail" on sheet 14 of the engineering drawings shall be no more than four inches from the bottom of the sump.

2. The butt and cross seams of the HDPE liner may be welded using the single wedge fusion welding process. These seams shall be destructively tested and non-destructively vacuum tested in accordance with the approved construction quality assurance document.

If you have any questions regarding this approval, please contact Mr. Peter Quackenbush at Waste Management Division, Department of Natural Resources, P.O. Box 30241, Lansing, Michigan 48909, or at telephone number 517-373-7397.

Sincerely,

Dennis M. Drake

Dennis M. Drake, Acting Chief
Waste Management Division
517-373-9523

cc: Mayor Tom Coogan, City of Melvindale
Mr. Ardys Bennett, City of Allen Park
Mr. Richard Traub, U.S. EPA
Mr. Kurt Childs, DNR-Livonia
Mr. Ken Burda, DNR-HWP/C&E File
Mr. Peter Quackenbush, DNR

Environmental and Safety Engineering Staff
Ford Motor Company

Suite 608
15201 Century Drive
Dearborn, Michigan 48120

September 16, 1992

Dennis Drake, Acting Chief
Waste Management Division
Michigan Department of Natural Resources
P.O. Box 30241
Lansing, Michigan 48909

Re: **Allen Park Clay Mine Landfill — Cell II Construction Details**
U.S. EPA ID No. MID 980 568 711

Dear Mr. Drake:

Pursuant to telephone discussions between Mr. Peter Quackenbush of your Division and Mr. Jeffrey Hartlund of our Office on August 20 and 21, 1992, it has been determined that the pipe boot detail on the secondary leachate removal pipe referenced in your August 19, 1992 letter will be constructed as originally shown on Sheet 14 of the engineering drawings (Revision date 3/92).

The 10 inch clearance was designed to facilitate both construction and inspection of the referenced pipe boot, ensuring a sound connection at the liner/pipe interface.

Based on the aforementioned discussions between Messrs. Quackenbush and Hartlund, construction has proceeded per the submitted plans. Should you have any questions regarding this transmittal, please contact me at 313/322-0701.

Sincerely,

David A. O'Connor
Facility Environmental Engineer
Environmental Quality Office

c: Mayor Thomas Coogan, City of Melvindale
Mr. John Ciotti, City of Allen Park
Mr. Richard Traub, U.S. EPA
Mr. Kurt Childs, DNR-Livonia
Mr. Ken Burda, DNR
Mr. Peter Quackenbush, DNR